

U.S. DEPARTMENT OF COMMERCE  
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY  
(formerly National Bureau of Standards-NBS)  
OFFICE OF STANDARDS SERVICES

**COMMERCIAL STANDARD CS188-66  
CAST IRON SOIL PIPE AND FITTINGS**

Commercial Standard CS188-66, Cast Iron Soil Pipe and Fittings, was withdrawn by the U.S. Department of Commerce in 1972.

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The following standard was used to replace CS188-66: ASTM A74-69, Standard Specification for Cast Iron Soil Pipe and Fittings. This ASTM standard is under the direct responsibility of Subcommittee A04.12, Pipes and Tubes.

For assistance on additional ASTM standards, copies and/or other sources and committee activities, contact:

Committee A04 on Iron Castings  
Telephone: (610) 832-9740  
ASTM Committees Fax: (610) 832-9666

**American Society for Testing and Materials (ASTM)**  
100 Barr Harbor Drive  
West Conshohocken, Pennsylvania 19428-2959, USA  
General Inquiries and Orders: (610) 832-9500/-9585  
Fax: (610) 832-9555; Internet: <http://www.astm.org>

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The initial printing of CS188-66 was made possible through the cooperation of the Cast Iron and Soil Pipe Institute. This organization can provide assistance and additional information on their standards/documents (examples: CISPI 301, Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications, and Cast Iron Soil Pipe and Fittings Handbook).

For further assistance and additional information concerning the subject, contact:

**Cast Iron Soil Pipe Institute (CISPI)**  
5959 Shallowford Road, Suite 419  
Chattanooga, Tennessee 37421, USA  
Telephone: (615) 892-0137  
Fax: (615) 892-0817  
Internet: <http://www.cispi.org>



**DEPARTMENT OF COMMERCE**  
**NATIONAL BUREAU OF STANDARDS**  
**Notice of Intent To Withdraw Certain Standards**

In accordance with § 10.12 of the Department of Commerce Procedures for the Development of Voluntary Product Standards (15 CFR Part 10, as revised; 35 F.R. 8349, dated May 28, 1970), notice is hereby given of the Department's intent to withdraw the nine standards identified below. It has been tentatively determined that each of these standards, Commercial Standard (CS) and Simplified Practice Recommendation (SPR), are technically inadequate and that due to the existence of other more up-to-date nationally recognized standards for the products covered, revision of these out-of-date standards would serve no useful purpose. The more up-to-date standards that are considered to be suitable and appropriate replacements for the standards listed for withdrawal are identified below in parentheses.

- CS 116-54 Homogeneous-Wall Bituminized-Fibre Drain and Sewer Pipe.  
(ASTM D 1861-69 Standard Specification for Homogeneous Bituminized Fiber Drain and Sewer Pipe.)
- CS 228-59 Laminated-Wall, Bituminized-Fibre Drain and Sewer Pipe.  
(ASTM D 1862-64 Standard Specification for Laminated-Wall Bituminized Fiber Drain and Sewer Pipe.)
- CS 270-65 Acrylonitrile-Butadiene-Styrene (ABS) Plastic Drain, Waste and Vent Pipe and Fittings.  
(ASTM D 2661-68 Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Drain, Waste and Vent Pipe and Fittings.)
- CS 272-65 Polyvinyl Chloride (PVC) Plastic Drain, Waste and Vent Pipe and Fittings.  
(ASTM D 2665-68 Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste and Vent Pipe and Fittings.)

CS 228-61 Styrene Rubber Plastic Drain and Sewer Pipe and Fittings.

(ASTM D 2852-69T Standard Specification for Styrene-Rubber Plastic Drain and Building Sewer Pipe and Fittings.)

✓ CS 186-66 Cast-Iron Soil Pipe and Fittings.  
(ASTM A 74-69 Standard Specification for Cast Iron Soil Pipe and Fittings.)

CS 143-60 Perforated Vitrified Clay Pipe (Standard and Extra Strength.)

(ASTM C 13-69 Standard Specification for Standard Strength Clay Sewer Pipe.)

(ASTM C 200-69 Standard Specification for Extra Strength Clay Pipe.)

(ASTM C 211-68 Standard Specification for Standard and Extra Strength Perforated Clay Pipe.)

CS 224-60 Vitrified Clay Sewer Pipe (Standard and Extra Strength.)

(ASTM C 13-69 Standard Specification for Standard Strength Clay Sewer Pipe.)

(ASTM C 200-69 Standard Specification for Extra Strength Clay Pipe.)

(ASTM C 211-68 Standard Specification for Standard and Extra Strength Perforated Clay Pipe.)

SPR 211-45 Clay Sewer Pipe and Fittings.

(ASTM C 12-64 Standard Specification for Installing Vitrified Clay Sewer Pipe.)

Any comments or objections concerning the intended withdrawal of any of these standards should be made in writing and directed to the Office of Engineering Standards Services, National Bureau of Standards, Washington, D.C. 20234, within 45 days of the publication of this notice. The effective date of withdrawal, where appropriate, will be not less than 60 days after the final notice of withdrawal. Withdrawal action terminates the authority to refer to a published standard as a voluntary standard developed under the Department of Commerce procedures, from the effective date of the withdrawal.

LAWRENCE M. KUSHNER,  
*Acting Director.*

JANUARY 19, 1972.

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DO NOT REMOVE  
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*Withdrawn 5/21/72*  
COMMERCIAL STANDARD CS188-66  
Supersedes CS188-59

# CAST IRON SOIL PIPE AND FITTINGS **WITHDRAWN**

A recorded  
voluntary standard of the  
trade published by  
the U.S. Department  
of Commerce



For sale by the Superintendent of Documents  
U.S. Government Printing Office, Washington, D.C. Price 40 cents

**U.S. DEPARTMENT OF COMMERCE**  
**NATIONAL BUREAU OF STANDARDS**  
**Office of Product Standards**

**EFFECTIVE DATE**

Having been passed through the regular procedures of the Office of Commodity Standards (now the Office of Product Standards) and approved by the acceptors hereinafter listed, this Commercial Standard is issued by the U.S. Department of Commerce, effective July 1, 1966.

JOHN T. CONNOR, *Secretary*

**COMMERCIAL STANDARDS**

Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Office of Product Standards of the National Bureau of Standards. Their purpose is to establish quality criteria, standard methods of test, rating, certification, and labeling of manufactured commodities, and to provide uniform bases for fair competition.

The adoption and use of a Commercial Standard is voluntary. However, when reference to a Commercial Standard is made in contracts, labels, invoices, or advertising literature, the provisions of the standard are enforceable through usual legal channels as a part of the sales contract.

Commercial Standards originate with the proponent industry. The sponsors may be manufacturers, distributors, or users of the specific product. One of these three elements of industry submits to the Office of Product Standards the necessary data to be used as the basis for developing a standard of practice. The Office by means of assembled conferences or letter referenda, or both, assists the sponsor group in arriving at a tentative standard of practice and thereafter refers it to the other elements of the same industry for approval or for constructive criticism that will be helpful in making any necessary adjustments. The regular procedure of the Office assures continuous servicing of each Commercial Standard through review and revision whenever, in the opinion of the industry, changing conditions warrant such action.

**SIMPLIFIED PRACTICE RECOMMENDATIONS**

Under a similar procedure the Office of Product Standards cooperates with industries in the establishment of Simplified Practice Recommendations. Their purpose is to eliminate avoidable waste through the establishment of standards of practice for sizes, dimensions, varieties, or other characteristics of specific products; to simplify packaging practices; and to establish simplified methods of performing specific tasks.

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The initial printing of Commercial Standard CS188-66 was made possible through the cooperation of the Cast Iron Soil Pipe Institute in securing copies for its members.

# CAST IRON SOIL PIPE AND FITTINGS

[Effective July 1, 1966]

## 1. PURPOSE AND SCOPE

**1.1 PURPOSE.**—The purpose of this commercial standard is to establish standards covering material, principal dimensions, and dimensional tolerances for extra heavy and service weight cast iron soil pipe and fittings, in accordance with general needs of producers, distributors, and users. It is intended to serve as a basis for common understanding between buyers and sellers. Through certification, the purchaser may receive advance assurance that the provisions of this standard are fulfilled.

**1.2 SCOPE.**—This standard covers pipe and fittings of the following patterns and, when so designated, may apply to any other patterns that conform with the requirements given herein.

### Pipe:

Extra heavy, 5-foot and 10-foot lengths	1, 3
Service weight, 5-foot and 10-foot lengths	2, 3
Nominal Shipping Weights	55, 56
Outside dimensions (for detailing)	Appendix

### Fittings:

¼ bends; long ¼ bends	4, 5
Long low-hub ¼ bends	6
¼ bends, low heel; high heel ¼ bends	7, 8
¼ bends, short sweep; long sweep ¼ bends	9, 10
½ bends	11
¾ bends; long ¾ bends	12, 13
¾ bends; long ¾ bends	14, 15
⅞ bends	16
Y branches	17
Y branches, cleanout	18, 19
Y branches, inverted	20
Y branches, combination ¼ bends	21
Y branches, combination ½ bends, cleanout	22
Y branches, upright	23
Sanitary T branches	24
Sanitary T branches, cleanout	25

### Fittings:—cont'd

Tapped sanitary T branches	26
T branches, tapped T branches	27, 28
T branches, cleanout	29
Vent branches	30
Offsets, regular	31-35
Offsets, ¼ bend	36-40
Double hubs, long double hubs	41, 42
Reducers	43
Increasesers	44, 45, 46
S traps; full, ¾, ½	47, 48, 49
Running traps	50
Screw plugs (brass)	51
Plugs, for hub	52
Iron-body ferrules	53
Side inlets	53 (note 2)
Tapping bosses	54
Nominal Shipping Weights	57-106

## 2. REQUIREMENTS

### 2.1 GENERAL REQUIREMENTS

**2.1.1 Material, general.**—The pipe and fittings shall be iron castings suitable for installation and service in drainage, waste, vent and sewer lines, and shall meet all applicable requirements and tests given herein.

**2.1.2 Cast iron.**—The castings shall be made of gray cast iron, produced by an established commercial method that provides adequate control over chemical and physical properties. The castings shall be sound, true to pattern, and of compact close grain which permits drilling and cutting by ordinary methods. The interior surface shall be reasonably smooth and free from defects which would render the castings unfit for the use for which they are intended.

**2.1.3 Marking.**—Each length of pipe and each fitting shall be plainly marked with the manufacturer's initials or registered trademark by which he can be readily identified, and with letters to indicate the proper weight classification, as follows:

XH	Extra Heavy
SV	Service weight

If pipe is marked on the barrel the marking shall begin about 2 inches beyond the base of the hub and extend along the barrel not more

than 12 inches. On fittings, the markings shall be located away from the spigot end so as not to interfere with proper joining upon installation. The marking may be cast, stenciled, or otherwise applied on the pipe, so as to be clear and legible at the time of installation. The marking shall be cast on fittings.

**2.1.4 Coating.**—The pipe and fittings shall be uniformly coated with coal tar pitch, or similar bituminous material suitable for the purpose, that is adherent and without a tendency to scale or become brittle. The coating shall be applied to all surfaces except in threaded openings.

## 2.2 PIPE.—

**2.2.1 Ends of pipe.**—Single-hub pipe shall have a hub at one end and a spigot at the other. Double-hub pipe shall have a hub at each end. Hubs shall have lead grooves. Spigot end may be either with or without a bead, and inner end of hub may be either with or without a centering recess, all combinations of which shall make a satisfactory leakproof joint. Hub and barrel shall be cast in one piece. (See Fig. 1.)

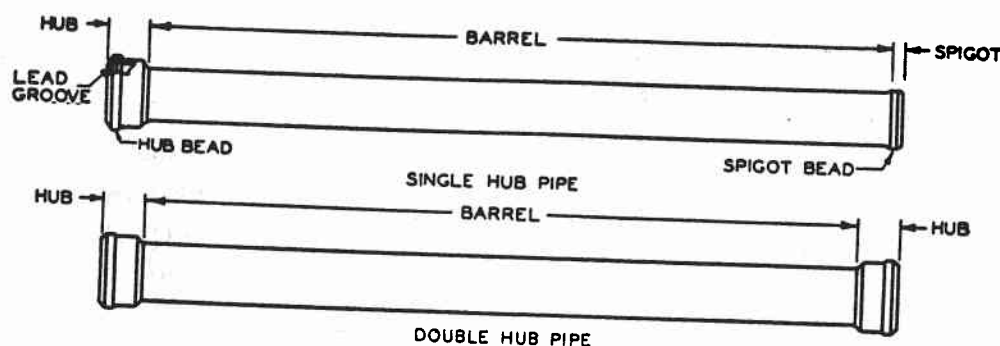


FIGURE 1. Single hub and double hub cast iron soil pipe.

**2.2.2 Dimensions of pipe.**—Single hub pipe shall be of 5 foot and 10 foot nominal laying lengths. The laying length shall be measured as shown in the figures above tables 1 and 2, and shall be within the tolerances on laying length specified in table 3. Double hub pipe shall be of the same overall length as single hub pipe of the same size. Its laying length shall be 5 feet minus the telescoping length (dimension Y), or 10 feet minus the telescoping length (dimension Y). Other dimensions shall be as specified in tables 1 and 2 as applicable, and be within the tolerances specified in table 3. The dimensions shall apply to pipe before any coating is applied.

**2.2.3 Straightness of pipe.**—Pipe shall be straight to the extent that any deflections in the barrel of a 5-foot length of pipe shall not exceed  $\frac{1}{4}$  inch for sizes 4 inches and larger, and shall not exceed  $\frac{1}{16}$  inch for smaller sizes; for 10-foot lengths, deflections in the barrel

shall not exceed  $\frac{1}{2}$  inch for sizes 4 inches and larger, nor exceed  $\frac{3}{8}$  inch for smaller sizes.

**2.2.4 Weight of pipe.**—The weight of individual lengths of pipe, without coating, shall be not more than five percent (5%) under the nominal shipping weight as listed in tables 55 and 56.

## 2.3 FITTINGS.—

**2.3.1 Dimensions of fittings.**—All fittings shall conform to the dimensions specified for hub and spigot ends in tables 1 and 2, as applicable. Fittings of the patterns specified herein shall conform to the applicable dimensions in tables 4 to 54, inclusive, and to the tolerances in table 3. Other patterns shall conform to tables 1 and 2, as applicable, for hub and spigot dimensions, and for wall thickness throughout, and to dimension R', tables 24 and 26, for the minimum radius of any drainage inlets that such fittings may provide. All fittings shall have spigot ends of sufficient length to provide adequate room for making proper joints. All dimensions given herein shall apply to fittings before any coating is applied.

**2.3.2 Water seal of traps.**—Traps shall provide water seals as follows:

Trap Size	Minimum Water Seal
inches	inches
2	2
3 to 6, inclusive	2½
8 to 12, inclusive	3
15	3½

**2.3.3 Ends of fittings.**—Hubs shall have lead grooves and spigot end may be either with or without a bead and inner end of hub may be either with or without a centering recess, all combinations of which shall make a satisfactory leakproof joint. Tapped openings shall conform to 2.3.4.

Such as, for example, fittings known in the trade as "specials," when designated as being in conformity with this standard.

2.3.4 *Pipe threads.*—Screw plugs and tapped openings in fittings shall have American Standard taper pipe threads. The threads shall be in accordance with the American Standard for Pipe Threads, B2.1<sup>2</sup>, or with the National Bureau of Standards Handbook H28, Screw Thread Standards for Federal Services,<sup>3</sup> of the current issue.

2.3.4.1 Internal threads shall be chamfered at the entering end approximately to the major diameter of the thread, at an angle of approximately 45° with the axis of the thread, and the entering end of external threads shall be similarly chamfered approximately to the minor diameter of the thread, for easy entrance in making a joint and for protection of the thread. The chamfer shall be concentric with the thread and shall be included in measurements of thread length.

2.3.5 *Weight of fittings.*—The weight of individual fittings, without coating, shall be not more than five percent (5%) under the nominal shipping weight as listed in tables 57 through 106.

## 2.4 METHOD OF SPECIFYING FITTINGS.—

2.4.1 *Method of specifying sizes of fittings of more than one size.*—The sizes are designated by the order of listing, as follows:

(a) Branch and tapped fittings:

- (1) Size of run.<sup>4</sup>
- (2) Size of branch.

(b) Reducers, increasers, and offset fittings:

- (1) Size of inlet or run.<sup>4</sup>
- (2) Size of outlet or offset distance.
- (3) Length, if supplied in more than one length.

2.4.2 *Method of specifying hand of fittings with side inlets and outlets.*—When placed in the position described below, if the side inlet or outlet appears on the right, it is a right hand fitting; if on the left, it is a left hand fitting.

(a) Bends and offsets:

Place the fitting with the hub facing toward the observer and the spigot end lower than the hub.

(b) Branch fittings:

Place the branch toward the observer and the spigot end lower than the hub.

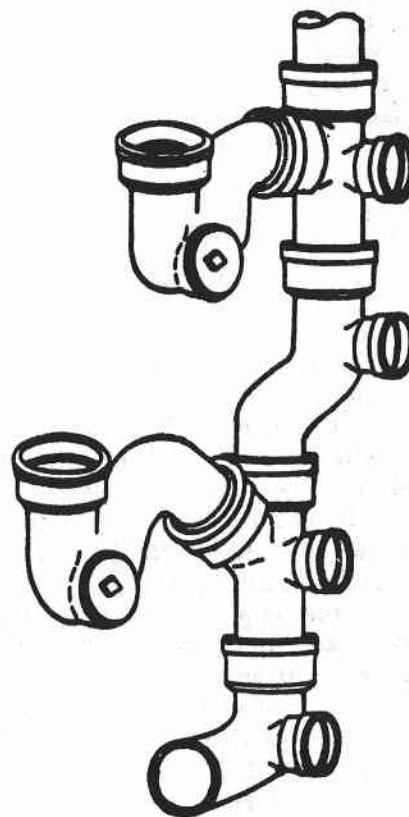
(c) Traps:

Place in the position in which the trap is installed with the hub toward the observer.

<sup>2</sup> Copies may be obtained from American Standards Association, Inc., 10 East 40th Street, New York, N.Y., 10016.

<sup>3</sup> Copies may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

<sup>4</sup> The run is that portion of the fitting which forms part of the main drain, waste or vent line. The spigot end is ordinarily the outlet.



2.4.2.1 The fittings illustrated have right hand inlet or cleanout. Left hand fittings have these openings on the side opposite to that shown.

## 3. INSPECTION AND TESTING

3.1 *Inspection and test by the Manufacturer.*—Pipe and fittings shall be thoroughly inspected by the manufacturer before shipment. The manufacturer shall make all tests as specified herein, and the results of the tests shall be furnished to the purchaser upon request in accordance with mutually acceptable arrangements.

3.1.1 On the sample pieces selected for test, the inside diameter of the hub and barrel and the outside diameter of the spigot end and barrel shall be checked by suitable gages.

3.1.2 Fittings shall be inspected for soundness and brittleness by methods generally accepted as standard by the manufacturer and purchaser.

3.1.3 The minimum internal diameter of pipe and fittings shall be that dimension resulting from the subtraction of two times the nominal wall thickness from the minimum outside diameter using the dimensions and tolerances shown in tables 1, 2, and 3.

**3.2 Inspection and tests by the Purchaser.**—Inspection and tests may be made by the purchaser at the place of manufacture. The manufacturer shall provide, without charge, all reasonable facilities needed to determine that the material is in accordance with this standard.

**3.3 Tests.**—

**3.3.1 Pressure tests for pipe.**—Pipe shall withstand an internal pressure applied by one of the following methods either before or after coating:

- (a) hydrostatic pressure at 50 pounds per square inch.
- (b) air pressure at 15 pounds per square inch with pipe submerged in water.

Pipe shall show no defects under the test.

**3.3.1.1 Number of pressure tests required.**—Sample lengths of pipe shall be taken for test, unless each length is required to be tested. When sample lengths are tested, the samples shall be taken at substantially regular intervals in the course of production so as to be representative of the material delivered, and shall consist of at least 20 percent (20%) of the lengths produced in each size. For every sample found defective, four or more additional samples shall be taken. Each additional sample shall be representative of the same material as that of the defective sample, and shall withstand the pressure test without showing defects.

**3.3.2 Mechanical tests for cast iron.**—When specified, tests shall be made to determine the mechanical properties of the cast iron used in the manufacture of cast iron soil pipe and fittings.

**3.3.2.1 Transverse bend test.**—The transverse bend test shall be performed in accordance with the requirements of ASTM Designation A438-62, Standard Method for Transverse Testing of Gray Cast Iron.<sup>5</sup> The test bar shall be 1.2 inches in diameter by 21 inches in length, and loaded at a point midway between supports 18 inches apart. The breaking load shall be not less than 1750 pounds,

<sup>5</sup> Later issues of the ASTM publication may be used provided the requirements are applicable and consistent with the issue designated. Copies of ASTM publications are obtainable from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103

and the deflection at the point of application of the load shall be not less than 0.20 inch.

**3.3.2.2 Tensile strength.**—The tensile strength shall be determined in accordance with ASTM Designation E-8-61T, Tension Testing of Metallic Materials (Tentative)<sup>5</sup> using Specimen 2, Fig. 16, standard test specimen for cast iron. The tensile strength shall be not less than 21,000 pounds per square inch.

**3.3.3 Chemical tests.**—Chemical analyses shall be made regularly and at sufficiently close intervals for adequate determinations of the significant chemical constituents of the cast iron. Drillings for analyses may be taken from test ingots, broken test specimens, or from castings and shall conform to the following requirements as to chemical composition in accordance with ASTM Designation A126-61T, Tentative Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings:<sup>5</sup>

**CLASS A (Regular gray iron)**

Phosphorus, maximum, percent 0.75

Sulphur, maximum, percent--- 0.12

If sulphur does exceed the above limit, it shall not exceed one-fourth of the percentage of manganese content. Silicon and carbon shall be present in sufficient amounts to produce gray cast iron as indicated by the appearance of fractured surfaces.

**4. CERTIFICATION**

4.1 In order that purchasers may be assured that cast iron soil pipe and fittings comply with all requirements of this Commercial Standard, it is recommended that manufacturers include the following statement in conjunction with their name and address, on invoices, sales literature, labels, etc.:

This product complies with Commercial Standard CS188-66 for Cast Iron Soil Pipe and Fittings, as developed under the procedure of the Office of Product Standards, and published by the U.S. Department of Commerce.



## EARLIER EDITIONS

The first edition of this Commercial Standard was approved for issuance in 1953, and became effective in that year. Since that time the industry has maintained the program abreast of changing conditions through revision, the present one being the second. The previous revision, with a summary of the changes accomplished, bore the designation CS188-59.

## CURRENT REVISION

The current revision was requested by the Cast Iron Soil Pipe Institute to bring the standard abreast of current practice in the industry. The principal changes in the revision consist of the inclusion of the requirement that spigot ends of the fittings may be furnished with or without a bead, and the deletion of the identification section requiring special marking. Editorial changes have also been made for clarification purposes, including new tables for the nominal shipping weights of pipe fittings.

The proposed revision was sent to the industry's Standing Committee for review. With the approval of the majority of the Committee, the revision was circulated to all interests, including manufacturers, distributors, and users on October 29, 1965 for acceptance.

The Office of Product Standards (formerly the Commodity Standards Division) announced on May 6, 1966 that acceptances had been received representing a satisfactory majority of the industry, and the adoption of the revision was announced effective for new production beginning July 1, 1966 and designated CS188-66.

Project Manager—D. R. Stevenson, Office of Product Standards, National Bureau of Standards, U.S. Department of Commerce.

## STANDING COMMITTEE

The following individuals comprise the membership of the Standing committee, which is to review prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Office of Product Standards, U.S. Department of Commerce, which acts as secretary for the committee.

- E. J. Hyche, Executive Vice President, Rich Manufacturing Company, 866 N. Columbia Blvd., Portland, Oregon (Chairman)
- Harold Witherspoon, Central Foundry Co., Holt, Alabama
- J. W. Perry, Jr., Vice President, Alabama Pipe Company, Division Woodward Iron Company, 20th and McCoy (P.O. Box 791), Anniston, Alabama
- G. R. Kinnally, General Manager, Jobbing Division, James B. Clow & Sons, Inc., 201 N. Talman Avenue, P.O. Box 6600-A, Chicago 80, Illinois
- J. H. Peery, 221 N. LaSalle Street, Chicago, 1, Illinois. (Secretary, Central Supply Association)
- Harrison Somerville, Vice President, Thomas Somerville Company, First & N Streets, N.E., Washington, D.C. (Rep. American Institute of Wholesale Plumbing & Heating Supply Associations)
- Sam H. Lane, Tyler Pipe and Foundry Company, P.O. Box 2027, Tyler, Texas.
- C. D. Brownell, Reliable Plumbing & Heating Company, 1607 S. Neil Street, Champaign, Illinois 61823 (Rep. National Association of Plumbing Contractors)
- Hugh Perrin, 2133 Tunlaw Road, Washington, D.C. 20007 (Rep. American Institute of Architects)
- Jack R. Allen, 520 Mission Street, South Pasadena California 91031 (Rep. Western Plumbing Officials Association, Inc.)
- Lyle M. Reading, Chief, Bureau of Plumbing, Department of Buildings and Safety Engineering, 412 City-County Building, Detroit, Michigan 48226

**EXTRA HEAVY**

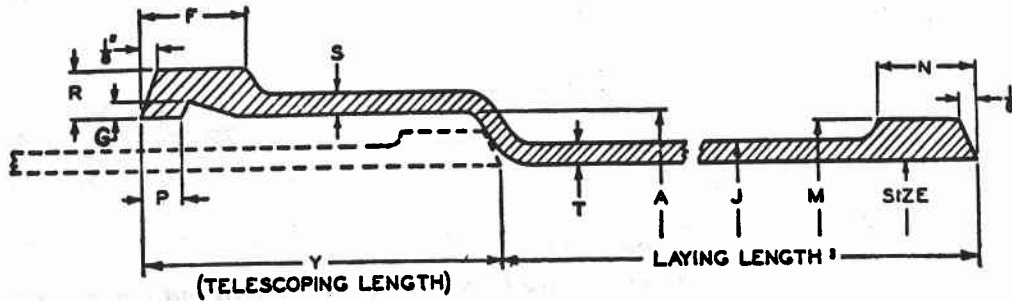


TABLE-1. Dimensions of hubs, spigots, and barrels for **extra-heavy** cast iron soil pipe and fittings

Size <sup>1</sup>	Inside diameter of hub <sup>2</sup>	OUTSIDE DIAMETER OF SPIGOT <sup>2,4</sup>	Outside diameter of barrel <sup>2</sup>	Telescoping length <sup>2</sup>	Thickness of barrel	
	A	M	J	Y	T (nominal)	T (min.)
<i>inches</i>	<i>inches</i>	<i>inches</i>	<i>inches</i>	<i>inches</i>	<i>inch</i>	<i>inch</i>
2.....	3.06	2.75	2.38	2.50	0.19	0.12
3.....	4.19	3.88	3.50	2.75	.25	.18
4.....	5.19	4.88	4.50	3.00	.25	.18
5.....	6.19	5.88	5.50	3.00	.25	.18
6.....	7.19	6.88	6.50	3.00	.25	.18
8.....	9.50	9.00	8.62	3.50	.31	.25
10.....	11.62	11.13	10.75	3.50	.37	.31
12.....	13.75	13.13	12.75	4.25	.37	.31
15.....	17.00	16.25	15.88	4.25	.44	.37

Size <sup>1</sup>	Thickness of hub		WIDTH OF HUB BEAD <sup>2,5</sup>	WIDTH OF SPIGOT BEAD <sup>2,5</sup>	Distance from lead groove to end, pipe and fittings <sup>2</sup>	Depth of lead groove	
	Hub body	Over bead				G (min.)	G (max.)
	S (min.)	R (min.)	F	N	P		
<i>inches</i>	<i>inches</i>	<i>inches</i>	<i>inches</i>	<i>inches</i>	<i>inch</i>	<i>inch</i>	<i>inch</i>
2.....	0.18	0.37	0.75	0.69	0.28	0.10	0.13
3.....	.25	.43	.81	.75	.28	.10	.13
4.....	.25	.43	.88	.81	.28	.10	.13
5.....	.25	.43	.88	.81	.28	.10	.13
6.....	.25	.43	.88	.81	.28	.10	.13
8.....	.34	.59	1.19	1.12	.38	.15	.19
10.....	.40	.65	1.19	1.12	.38	.15	.19
12.....	.40	.65	1.44	1.38	.47	.15	.19
15.....	.46	.71	1.44	1.38	.47	.15	.19

<sup>1</sup> Nominal inside diameter.

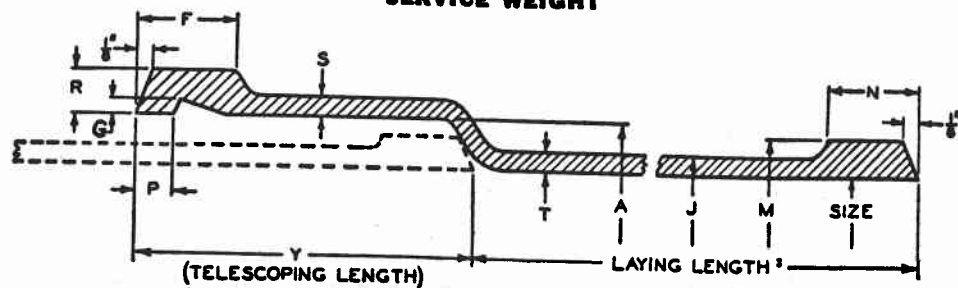
<sup>2</sup> For tolerances see table 3.

<sup>3</sup> Laying length, all sizes-Single hub 5'0"; Double hub 5'0" less Y, 5-foot lengths; single hub 10'0"; Double hub 10'0" less Y, for 10 foot lengths.

<sup>4</sup> If a bead is provided on the spigot end, M may be any diameter, between J and M.

<sup>5</sup> Hub ends and spigot ends can be made with or without draft, and spigot ends can be made with or without spigot bead.

**SERVICE WEIGHT**



**TABLE 2.** Dimensions of hubs, spigots, and barrels for *service-weight* cast iron soil pipe and fittings

Size <sup>1</sup>	Inside diameter of hub <sup>2</sup>	Outside diameter of spigot <sup>2,4</sup>	Outside diameter of barrel <sup>2</sup>	Telescoping length <sup>2</sup>	Thickness of barrel	
	A	M	J	Y	T (nominal)	T (min.)
inches	inches	inches	inches	inches	inch	inch
2	2.94	2.62	2.30	2.50	0.17	0.12
3	3.94	3.62	3.30	2.75	.17	.13
4	4.94	4.62	4.30	3.00	.18	.14
5	5.94	5.62	5.30	3.00	.19	.15
6	6.94	6.62	6.30	3.00	.20	.16
8	9.25	8.75	8.38	3.50	.22	.17
10	11.38	10.88	10.50	3.50	.26	.21
12	13.50	12.88	12.50	4.25	.28	.22
15	16.75	16.00	15.62	4.25	.30	.25

Size <sup>1</sup>	Thickness of hub		Width of hub bead <sup>2,5</sup>	Width of spigot bead <sup>2,5</sup>	Distance from lead groove to end, pipe and fittings <sup>2</sup>	Depth of lead groove	
	Hub body Over bead						
		S(min.)	R(min.)	F	N	P	G(min.)
inches	inch	inch	inches	inches	inch	inch	inch
2	0.13	0.34	0.75	0.69	0.28	0.10	0.13
3	.16	.37	.81	.75	.28	.10	.13
4	.16	.37	.88	.81	.28	.10	.13
5	.16	.37	.88	.81	.28	.10	.13
6	.18	.37	.88	.81	.28	.10	.13
8	.19	.44	1.19	1.12	.38	.15	.19
10	.27	.53	1.19	1.12	.38	.15	.19
12	.27	.53	1.44	1.38	.47	.15	.19
15	.30	.58	1.44	1.38	.47	.15	.19

<sup>1</sup> Nominal inside diameter.

<sup>2</sup> For tolerances see Table 3.

<sup>3</sup> Laying length, all sizes-Single hub 5'0"; Double hub 5'0" less Y, for 5-foot lengths; single hub 10'0"; Double hub 10'0" less Y, for 10 foot lengths.

<sup>4</sup> If a bead is provided on the spigot end, M may be any diameter between J and M.

<sup>5</sup> Hub ends and spigot ends can be made with or without draft, and spigot ends can be made with or without spigot bead.

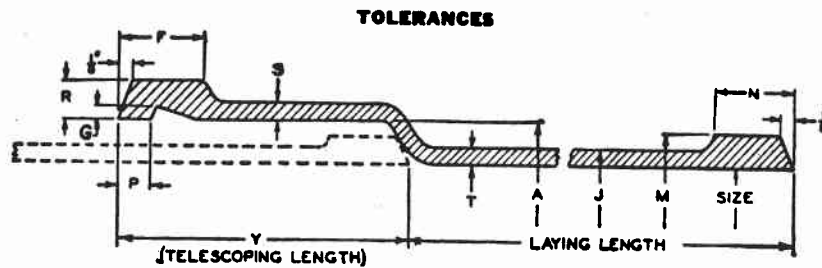


Table 3 Tolerances for extra-heavy and service-weight cast iron soil pipe and fittings

Size <sup>1</sup>	Inside diameter of hub	Outside diameter of spigot <sup>3</sup>	Outside diameter of barrel	Telescoping length	Laying length (inches)			
	A	M	J	Y	Pipe, 5-foot lengths	Pipe, 10-foot lengths	Fittings	
							Regular	Extra long <sup>2</sup>
Inches	Inch	Inch	Inch	Inch				
2	±.06	+.06	±.09	±.06	±1/4	±1/2	±1/8	±1/16
3	+.09 -.06	+.09	±.09	±.06	±1/4	±1/2	±1/8	±1/16
4	+.09 -.06	+.09	±.09	±.06	±1/4	±1/2	±1/8	±1/16
5	+.09 -.06	+.09	±.09	±.06	±5/16	±5/8	±3/16	±3/32
6	+.09 -.06	+.09	±.09	±.06	±5/16	±5/8	±3/16	±3/32
8	±.13	+.13	±.13	±.13	±5/16	±5/8	±3/16	±3/32
10	±.13	+.13	±.13	±.13	±3/8	±3/4	±1/4	±1/8
12	±.13	+.13	±.19	±.19	±3/8	±3/4	±1/4	±1/8
15	±.13	+.13	±.19	±.19	±3/8	±3/4	±1/4	±1/8

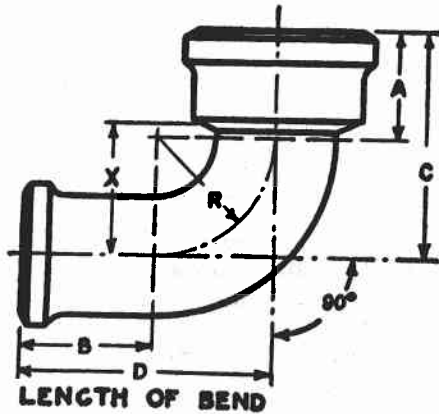
Size <sup>1</sup>	Width of hub bead	Width of spigot bead	Distance from lead groove to end, pipe and fittings
	F	N	P
Inches	Inch	Inch	Inch
2	-.13	-.13	±.03
3	-.13	-.13	±.03
4	-.13	-.13	±.03
5	-.13	-.13	±.03
6	-.13	-.13	±.03
8	-.13	-.13	±.07
10	-.13	-.13	±.07
12	-.13	-.13	±.09
15	-.13	-.13	±.09

<sup>1</sup> Nominal inside diameter.

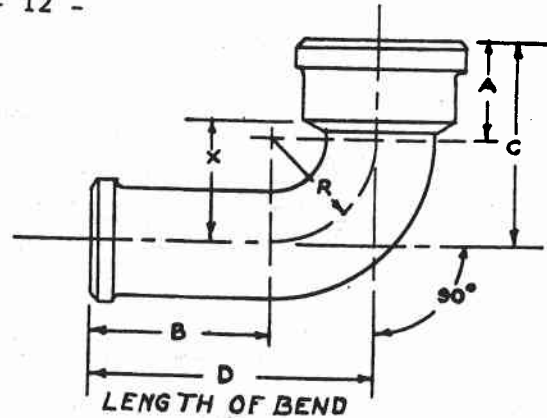
<sup>2</sup> These tolerances apply to each foot of extra-long fittings in excess of regular laying lengths specified herein.

<sup>3</sup> These tolerances apply when bead is provided on the spigot end.

NOTE: The tolerances set forth in Table 3 are intended for pipe and fittings designed for use with lead and oakum joints; however, these same tolerances may apply to pipe and fittings designed for use with a compression type gasket joint.



(Illustration for Table 4)



(Illustration for Table 5)

Table 4 1/4 Bends

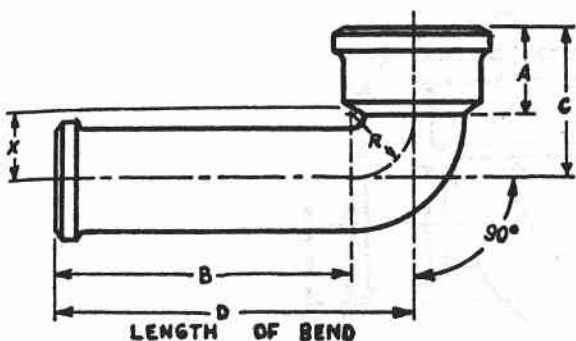
Size (inches)	Dimensions in inches <sup>1</sup>					
	A	B	C	D	R	X
2.....	2 1/4	3	5 1/4	6	3	3 1/4
3.....	3 1/4	3 1/2	6 1/4	7	3 1/2	4
4.....	3 3/4	4	7 1/4	8	4	4 1/2
5.....	3 1/2	4	8	8 1/2	4 1/2	5
6.....	3 3/4	4	8 1/4	9	5	5 1/2
8.....	4 1/4	5 1/2	10 1/4	11 1/4	6	6 1/2
10.....	4 3/4	5 3/4	11 1/4	12 1/4	7	7 1/2
12.....	5	7	13	15	8	8 1/2
15.....	5	7	14 1/4	16 1/4	9 1/2	10 1/4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions D and X are laying lengths.

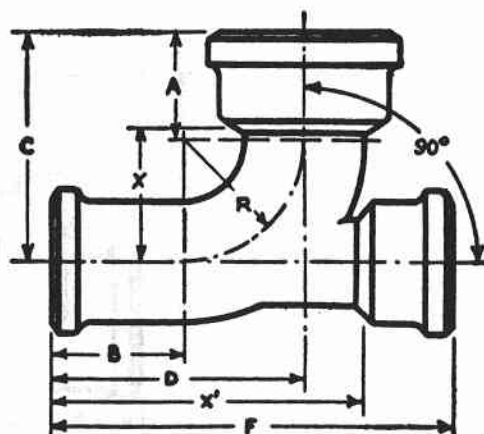
Table 5 Long 1/4 Bends

Size (inches)	Dimensions in inches <sup>1</sup>					
	A	B	C	D	R	X
2 by 12.....	2 1/4	9	5 1/4	12	3	3 1/4
2 by 18.....	2 1/4	15	5 1/4	18	3	3 1/4
2 by 24.....	2 1/4	21	5 1/4	24	3	3 1/4
3 by 12.....	3 1/4	8 1/2	6 1/4	12	3 1/2	4
3 by 18.....	3 1/4	14 1/2	6 1/4	18	3 1/2	4
3 by 24.....	3 1/4	20 1/2	6 1/4	24	3 1/2	4
4 by 12.....	3 3/4	8	7 1/4	12	4	4 1/2
4 by 18.....	3 3/4	14	7 1/4	18	4	4 1/2
4 by 24.....	3 3/4	20	7 1/4	24	4	4 1/2
5 by 12.....	3 1/2	7 1/2	8	12	4 1/2	5
5 by 18.....	3 1/2	13 1/2	8	18	4 1/2	5
5 by 24.....	3 1/2	19 1/2	8	24	4 1/2	5
6 by 12.....	3 3/4	7	8 1/4	12	5	5 1/2
6 by 18.....	3 3/4	13	8 1/4	18	5	5 1/2
6 by 24.....	3 3/4	19	8 1/4	24	5	5 1/2
8 by 12.....	4 1/4	6	10 1/4	12	6	6 1/2
8 by 18.....	4 1/4	12	10 1/4	18	6	6 1/2
8 by 24.....	4 1/4	18	10 1/4	24	6	6 1/2

<sup>1</sup>For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions D and X are laying lengths.



(Illustration for Table 6)



(Illustration for Table 7)

Table 6 Long low-hub 1/4 Bends

Size (inches)	Dimensions in inches <sup>1</sup>					
	A	B	C	D	R	X
3 by 12.....	2 1/4	10	4 1/4	12	2	2
3 by 14.....	2 1/4	12	4 1/4	14	2	2
3 by 16.....	2 1/4	14	4 1/4	16	2	2
3 by 18.....	2 1/4	16	4 1/4	18	2	2
4 by 12.....	3	9 1/4	5 1/4	12	2 1/4	2 1/4
4 by 14.....	3	11 1/4	5 1/4	14	2 1/4	2 1/4
4 by 16.....	3	13 1/4	5 1/4	16	2 1/4	2 1/4
4 by 18.....	3	15 1/4	5 1/4	18	2 1/4	2 1/4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions D and X are laying lengths.

Table 7 1/4 Bend with heel inlet

Size (inches)	Dimensions in inches <sup>1</sup>							
	A	B	C	D	F	R	X	X'
3 by 2.....	3 1/4	3 1/4	6 1/4	7	11 1/4	3 1/4	4	9
4 by 2.....	3 1/4	4	7 1/4	8	13	4	4 1/4	10 1/4
4 by 3.....	3 1/4	4	7 1/4	8	13 1/4	4	4 1/4	10 1/4
5 by 2.....	3 1/4	4	8	8 1/2	14 1/4	4 1/4	5	11 1/4
5 by 3.....	3 1/4	4	8	8 1/2	14 1/4	4 1/4	5	11 1/4
5 by 4.....	3 1/4	4	8	8 1/2	14 1/4	4 1/4	5	11 1/4
6 by 2.....	3 1/4	4	8 1/4	9	15	5	5 1/4	12 1/4
6 by 3.....	3 1/4	4	8 1/4	9	15 1/4	5	5 1/4	12 1/4
6 by 4.....	3 1/4	4	8 1/4	9	15 1/4	5	5 1/4	12 1/4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions D, X, and X' are laying lengths.

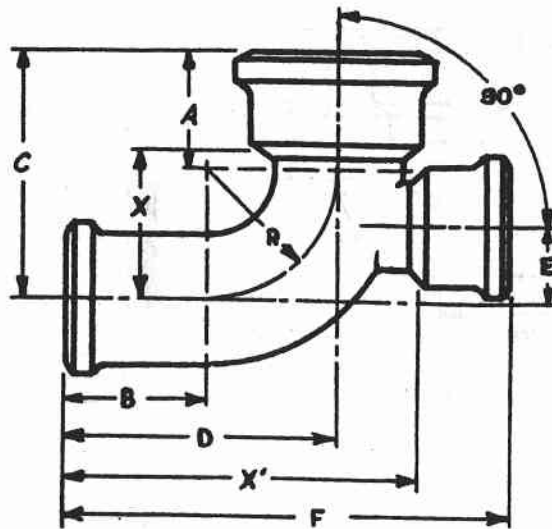
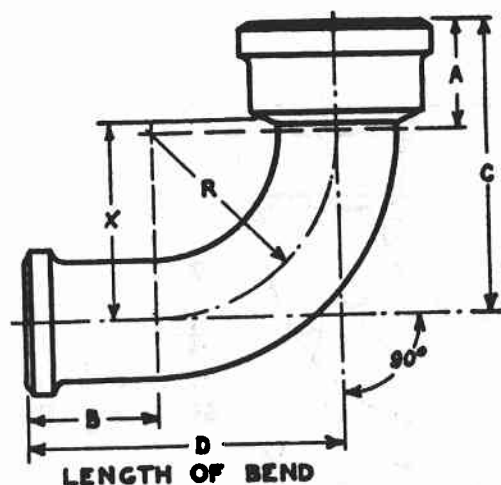


Table 8 High heel 1/4 Bends

Size (inches)	Dimensions in inches <sup>1</sup>								
	A	B	C	D	E	F	R	X	X'
3 by 2.....	3 1/4	3 1/4	6 1/4	7	2 1/4	11 1/4	3 1/2	4	9
4 by 2.....	3 1/4	4	7 1/4	8	2 1/4	13	4	4 1/2	10 1/2
4 by 3.....	3 1/4	4	7 1/4	8	2 1/4	13 1/4	4	4 1/2	10 1/2
5 by 2.....	3 1/4	4	8	8 1/2	3	14 1/4	4 1/2	5	11 1/4
5 by 3.....	3 1/4	4	8	8 1/2	2 1/2	14 1/4	4 1/2	5	11 1/4
5 by 4.....	3 1/4	4	8	8 1/2	2	14 1/4	4 1/2	5	11 1/4
6 by 2.....	3 1/4	4	8 1/2	9	3 1/4	15	5	5 1/2	12 1/4
6 by 3.....	3 1/4	4	8 1/2	9	3	15 1/4	5	5 1/2	12 1/4
6 by 4.....	3 1/4	4	8 1/2	9	2 1/2	15 1/4	5	5 1/2	12 1/4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions D, X, and X' are laying lengths.



(Illustration for Tables 9 and 10)

Table 9 Short sweep

Size (inches)	Dimensions in inches <sup>1</sup>					
	A	B	C	D	R	X
2.....	2½	3	7½	8	5	5½
3.....	3½	3½	8½	9	5½	6
4.....	3½	4	9½	10	6	6½
5.....	3½	4	10	10½	6½	7
6.....	3½	4	10½	11	7	7½
8.....	4½	5½	12½	13½	8	8½
10.....	4½	5½	13½	14½	9	9½
12.....	5	7	15	17	10	10½
15.....	5	7	16½	18½	11½	12½

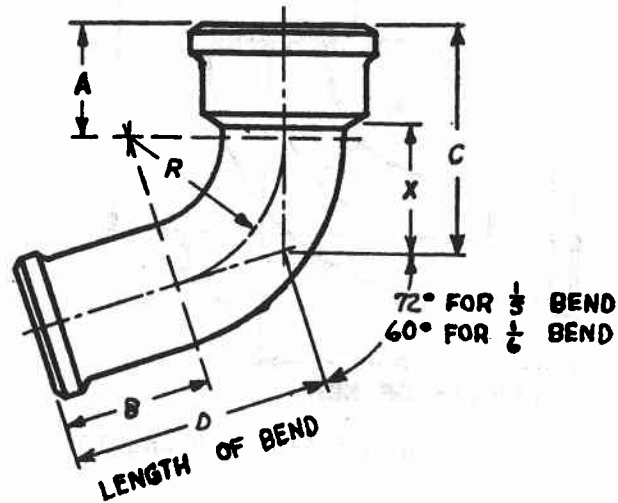
<sup>1</sup> For details of hubs and spigots, see tables 1 and 2  
NOTE.- Dimensions D and X are laying lengths.

Table 10 Long sweep

Size (inches)	Dimensions in inches <sup>1</sup>					
	A	B	C	D	R	X
2.....	2½	3	10½	11	8	8½
3.....	3½	3½	11½	12	8½	9
4.....	3½	4	12½	13	9	9½
5.....	3½	4	13	13½	9½	10
6.....	3½	4	13½	14	10	10½
8.....	4½	5½	15½	16½	11	11½
10.....	4½	5½	16½	17½	12	12½
12.....	5	7	18	20	13	13½
15.....	5	7	19½	21½	14½	15½

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions D and X are laying lengths.





(Illustration for Tables 11, 12, and 13)

Table 11 1/5 Bends

Size (inches)	Dimensions in inches <sup>1</sup>					
	A	B	C	D	R	X
2	2 $\frac{1}{4}$	3	4 $\frac{1}{2}$	5 $\frac{1}{2}$	3	2 $\frac{1}{2}$
3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	5 $\frac{1}{2}$	6 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$
4	3 $\frac{1}{2}$	4	6 $\frac{1}{2}$	6 $\frac{1}{2}$	4	3 $\frac{1}{2}$
5	3 $\frac{1}{2}$	4	6 $\frac{1}{2}$	7 $\frac{1}{2}$	4 $\frac{1}{2}$	3 $\frac{1}{2}$
6	3 $\frac{1}{2}$	4	7 $\frac{1}{2}$	7 $\frac{1}{2}$	5	4 $\frac{1}{2}$
8	4 $\frac{1}{2}$	5 $\frac{1}{2}$	8 $\frac{1}{2}$	9 $\frac{1}{2}$	6	5 $\frac{1}{2}$
10	4 $\frac{1}{2}$	5 $\frac{1}{2}$	9 $\frac{1}{2}$	10 $\frac{1}{2}$	7	5 $\frac{1}{2}$
12	5	7	10 $\frac{1}{2}$	12 $\frac{1}{2}$	8	6 $\frac{1}{2}$
15	5	7	11 $\frac{1}{2}$	13 $\frac{1}{2}$	9 $\frac{1}{2}$	7 $\frac{1}{2}$

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions D and X are laying lengths.

Table 12 1/6 Bends

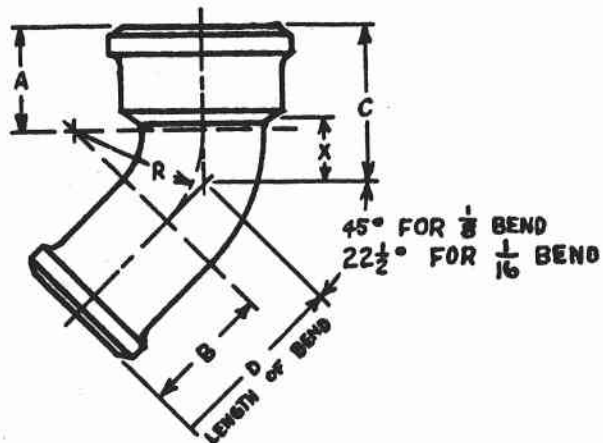
Size (inches)	Dimensions in inches <sup>1</sup>					
	A	B	C	D	R	X
2.....	2½	3	4½	4½	3	2
3.....	3¼	3½	5½	5½	3½	2½
4.....	3½	4	5½ <sup>11</sup> / <sub>16</sub>	6½ <sup>11</sup> / <sub>16</sub>	4	2½ <sup>11</sup> / <sub>16</sub>
5.....	3½	4	6½	6½	4½	3½
6.....	3½	4	6½	6½	5	3½
8.....	4½	5½	7½	9	6	4½
10.....	4½	5½	8½	9½	7	4½ <sup>11</sup> / <sub>16</sub>
12.....	5	7	9½	11½	8	5½
15.....	5	7	10½	12½	9½	6½

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions D and X are laying lengths.

Table 13 Long 1/6 bends

Size (inches)	Dimensions in inches <sup>1</sup>					
	A	B	C	D	R	X
2 by 12.....	2½	10½	4½	12	3	2
2 by 18.....	2½	16½	4½	18	3	2
2 by 24.....	2½	22½	4½	24	3	2
3 by 12.....	3½	10	5½	12	3½	2½
3 by 18.....	3½	16	5½	18	3½	2½
3 by 24.....	3½	22	5½	24	3½	2½
4 by 12.....	3½	9½ <sup>11</sup> / <sub>16</sub>	5½ <sup>11</sup> / <sub>16</sub>	12	4	2½ <sup>11</sup> / <sub>16</sub>
4 by 18.....	3½	15½ <sup>11</sup> / <sub>16</sub>	5½ <sup>11</sup> / <sub>16</sub>	18	4	2½ <sup>11</sup> / <sub>16</sub>
4 by 24.....	3½	21½ <sup>11</sup> / <sub>16</sub>	5½ <sup>11</sup> / <sub>16</sub>	24	4	2½ <sup>11</sup> / <sub>16</sub>
5 by 12.....	3½	9½	6½	12	4½	3½
5 by 18.....	3½	15½	6½	18	4½	3½
5 by 24.....	3½	21½	6½	24	4½	3½
6 by 12.....	3½	9½	6½	12	5	3½
6 by 18.....	3½	15½	6½	18	5	3½
6 by 24.....	3½	21½	6½	24	5	3½
8 by 12.....	4½	8½	7½	12	6	4½
8 by 18.....	4½	14½	7½	18	6	4½
8 by 24.....	4½	20½	7½	24	6	4½

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions D and X are laying lengths.



(Illustration for Tables 14, 15, and 16)

Table 14 1/8 Bend

Size (inches)	Dimensions in inches <sup>1</sup>					
	A	B	C	D	R	X
2.....	2 1/4	3	4	4 1/4	3	1 1/4
3.....	3 1/4	3 1/2	4 1 1/16	4 1 1/16	3 1/2	1 1 1/16
4.....	3 3/4	4	5 1/16	5 1 1/16	4	2 1/16
5.....	3 1/2	4	5 1/2	5 1/2	4 1/2	2 1/2
6.....	3 1/2	4	5 1/2	6 1/16	5	2 1/16
8.....	4 1/4	5 1/2	6 1/2	8	6	3 1/4
10.....	4 1/2	5 1/2	7	8 1/2	7	3 1/2
12.....	5	7	8 1/2	10 1/16	8	4 1/16
15.....	5	7	8 1 1/16	10 1 1/16	9 1/2	4 1 1/16

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions D and X are laying lengths.

Table 15 Long 1/8 bends

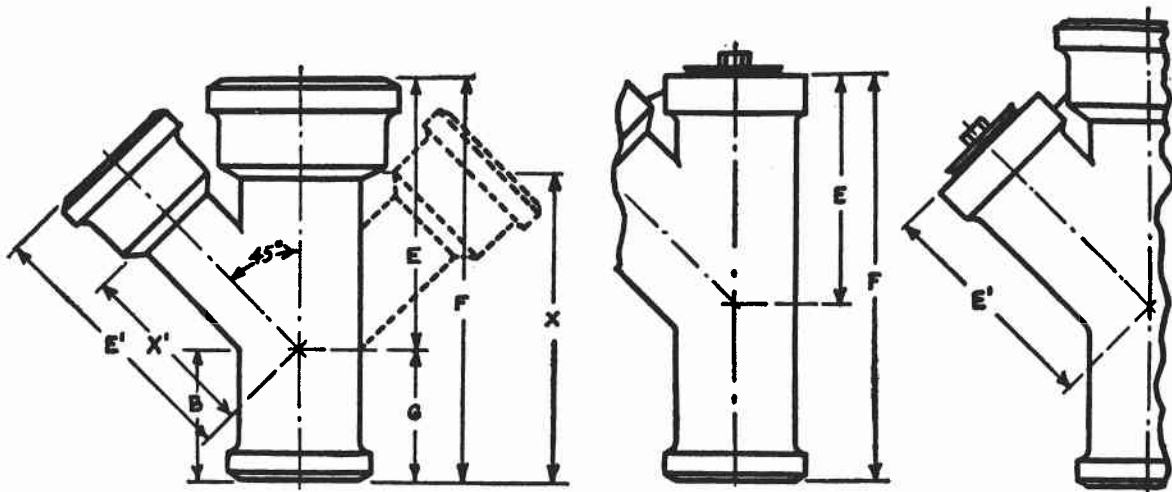
Size (inches)	Dimensions in inches <sup>1</sup>					
	A	B	C	D	R	X
2 by 12-----	2 1/4	10 1/4	4	12	3	1 1/4
2 by 18-----	2 1/4	16 1/4	4	18	3	1 1/4
2 by 24-----	2 1/4	22 1/4	4	24	3	1 1/4
3 by 12-----	3 1/4	10 1/4	4 1/4	12	3 1/4	1 1/4
3 by 18-----	3 1/4	16 1/4	4 1/4	18	3 1/4	1 1/4
3 by 24-----	3 1/4	22 1/4	4 1/4	24	3 1/4	1 1/4
4 by 12-----	3 1/4	10 1/4	5 1/4	12	4	2 1/4
4 by 18-----	3 1/4	16 1/4	5 1/4	18	4	2 1/4
4 by 24-----	3 1/4	22 1/4	5 1/4	24	4	2 1/4
5 by 12-----	3 1/4	10 1/4	5 1/4	12	4 1/4	2 1/4
5 by 18-----	3 1/4	16 1/4	5 1/4	18	4 1/4	2 1/4
5 by 24-----	3 1/4	22 1/4	5 1/4	24	4 1/4	2 1/4
6 by 12-----	3 1/4	9 1/4	5 1/4	12	5	2 1/4
6 by 18-----	3 1/4	15 1/4	5 1/4	18	5	2 1/4
6 by 24-----	3 1/4	21 1/4	5 1/4	24	5	2 1/4
8 by 12-----	4 1/4	9 1/4	6 1/4	12	6	3 1/4
8 by 18-----	4 1/4	15 1/4	6 1/4	18	6	3 1/4
8 by 24-----	4 1/4	21 1/4	6 1/4	24	6	3 1/4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions D and X are laying lengths.

Table 16 1/16 Bend

Size (inches)	Dimensions in inches <sup>1</sup>					
	A	B	C	D	R	X
2-----	2 1/4	3	3 1/4	3 1/4	3	1/4
3-----	3 1/4	3 1/4	3 1/4	4 1/4	3 1/4	1 1/4
4-----	3 1/4	4	4 1/4	4 1/4	4	1 1/4
5-----	3 1/4	4	4 1/4	4 1/4	4 1/4	1 1/4
6-----	3 1/4	4	4 1/4	5	5	1 1/4
8-----	4 1/4	5 1/4	5 1/4	6 1/4	6	1 1/4
10-----	4 1/4	5 1/4	5 1/4	6 1/4	7	2
12-----	5	7	6 1/4	8 1/4	8	2 1/4
15-----	5	7	6 1/4	8 1/4	9 1/4	2 1/4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions D and X are laying lengths.



Single and double Y branches  
(table 17)

View A showing  
cleanout plug on  
main (table 18)

View B showing clean-  
out plug on branch  
(table 19)

Table 17 Y branches, single and double

Size (inches)	Dimensions in inches <sup>1</sup>						
	B (min.)	E	E'	F	G	X	X'
2	3½	6½	6½	10½	4	8	4
3	4	8½	8½	13½	5	10½	5½
4	4	9½	9½	15	5½	12	6½
5	4	11	11	16½	5½	13½	8
6	4	12½	12½	18	5½	15	9½
8	5½	15½	15½	23	7½	19½	11½
10	5½	18	18	26	8	22½	14½
12	7	21½	21½	31½	10½	27	16½
15	7	25	25	35½	10½	31½	20½
3 by 2	4	7½	7½	11½	4½	9	5
4 by 2	4	8½	8½	12	3½	9	5½
4 by 3	4	9½	9	13½	4½	10½	6½
5 by 2	4	8½	9	12	3½	9	6½
5 by 3	4	9½	9½	13½	3½	10½	7
5 by 4	4	10½	10½	15	4½	12	7½
6 by 2	4	9½	9½	12	2½	9	7½
6 by 3	4	10½	10½	13½	3½	10½	7½
6 by 4	4	10½	11½	15	4½	12	8½
6 by 5	4	11½	11½	16½	4½	13½	8½
8 by 2	5½	10½	11	14	3½	10½	8½
8 by 3	5½	11½	11½	15½	3½	12	9
8 by 4	5½	12½	12½	17	4½	13½	9½
8 by 5	5½	13	13	18½	5½	15	10
8 by 6	5½	13½	13½	20	6½	16½	10½
10 by 4	5½	13½	14½	17	3½	13½	11½
10 by 5	5½	14½	14½	18½	4½	15	11½
10 by 6	5½	14½	15½	20	5½	16½	12½
10 by 8	5½	16½	16½	23	6½	19½	13½
12 by 4	7	15½	15½	19½	4½	15	12½
12 by 5	7	15½	15½	20½	4½	16½	12½
12 by 6	7	16½	16½	22½	5½	18	13½
12 by 8	7	18½	18½	25½	7½	21	14½
12 by 10	7	19½	19½	28½	8½	24	15½
15 by 6	7	18½	18½	22½	4	18	15½
15 by 8	7	19½	20½	25½	5½	21	17½
15 by 10	7	21½	21½	28½	6½	24	18½
15 by 12	7	22½	23½	31½	8½	27	19½

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2. For details of side inlets see illustration below table 53.  
NOTE.- Dimensions X and X' are laying lengths.

Table 18 Y branch cleanout with screw plug on main (view A)

Size (inches)	Dimensions in inches <sup>1</sup>					Minimum I.P.S. <sup>2</sup> tapping	
	E	E'	F	G	X'	'XH'	'SV'
2-----	5½	6½	9½	4	4	1½	1½
3-----	6½	8½	11½	5	5½	2½	2½
4-----	7½	9½	13½	5½	6½	3½	3½
5-----	9½	11	14½	5½	8	4	4
6-----	10½	12½	16½	5½	9½	5	5

<sup>1</sup> See notes under table 19.

Table 19 Y branch cleanout with screw plug on branch (view B)

Size (inches)	Dimensions in inches <sup>1</sup>					Minimum I.P.S. <sup>2</sup> tapping	
	E	E'	F	G	X	'XH'	'SV'
2-----	6½	5½	10½	4	8	1½	1½
3-----	8½	6½	13½	5	10½	2½	2½
4-----	9½	7½	15	5½	12	3½	3½
5-----	11	9½	16½	5½	13½	4	4
6-----	12½	10½	18	5½	15	5	5

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2. For details of tapping bosses, see table 54 and for details of screw plugs, see table 51.

<sup>2</sup> Iron Pipe Sizes

NOTE.- Dimensions X and X' are laying lengths.

Tappings permit entrance of testing plugs.

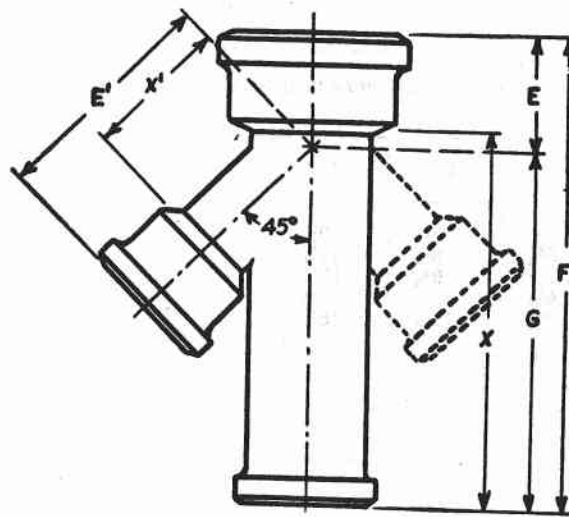
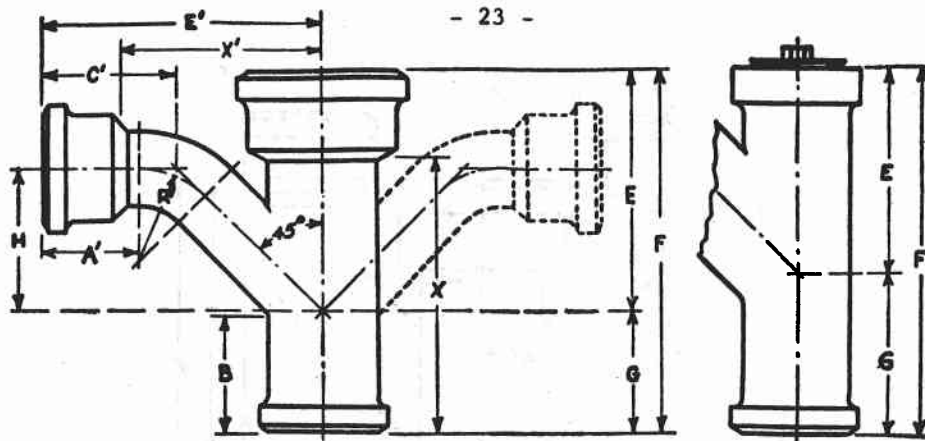


Table 20 Y branches, inverted, single and double

Size (inches)	Dimensions in inches <sup>1</sup>					
	E	E'	F	G	X	X'
2-----	3 $\frac{1}{4}$	5 $\frac{1}{4}$	12	8 $\frac{1}{4}$	9 $\frac{1}{2}$	3 $\frac{3}{4}$
3-----	4	7 $\frac{1}{4}$	15 $\frac{1}{4}$	11 $\frac{1}{4}$	12 $\frac{1}{2}$	4 $\frac{1}{4}$
4-----	4 $\frac{1}{2}$	8 $\frac{1}{4}$	17	12 $\frac{1}{2}$	14	5 $\frac{1}{4}$
5-----	4 $\frac{3}{4}$	10 $\frac{1}{4}$	18 $\frac{1}{2}$	13 $\frac{1}{4}$	15 $\frac{1}{2}$	7 $\frac{1}{4}$
6-----	5	11 $\frac{1}{4}$	20	15	17	8 $\frac{1}{4}$
3 by 2-----	3 $\frac{1}{4}$	6 $\frac{1}{4}$	13 $\frac{1}{4}$	10 $\frac{1}{4}$	11	4 $\frac{1}{4}$
4 by 2-----	3 $\frac{1}{4}$	7 $\frac{1}{4}$	14	10 $\frac{1}{4}$	11	4 $\frac{1}{4}$
4 by 3-----	3 $\frac{1}{4}$	8 $\frac{1}{4}$	15 $\frac{1}{4}$	11 $\frac{1}{4}$	12 $\frac{1}{2}$	5 $\frac{1}{4}$
5 by 2-----	2 $\frac{1}{4}$	8 $\frac{1}{4}$	14	11 $\frac{1}{4}$	11	5 $\frac{1}{4}$
5 by 3-----	3 $\frac{1}{4}$	8 $\frac{1}{4}$	15 $\frac{1}{4}$	12 $\frac{1}{4}$	12 $\frac{1}{2}$	6 $\frac{1}{4}$
5 by 4-----	4	9 $\frac{1}{4}$	17	13	14	6 $\frac{1}{4}$
6 by 2-----	2 $\frac{1}{4}$	8 $\frac{1}{4}$	14	11 $\frac{1}{4}$	11	6 $\frac{1}{4}$
6 by 3-----	2 $\frac{1}{4}$	9 $\frac{1}{4}$	15 $\frac{1}{4}$	12 $\frac{1}{4}$	12 $\frac{1}{2}$	6 $\frac{1}{4}$
6 by 4-----	3 $\frac{1}{4}$	10 $\frac{1}{4}$	17	13 $\frac{1}{4}$	14	7 $\frac{1}{4}$
6 by 5-----	4 $\frac{1}{4}$	10 $\frac{1}{4}$	18 $\frac{1}{4}$	14 $\frac{1}{4}$	15 $\frac{1}{4}$	7 $\frac{1}{4}$

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions X and X' are laying lengths.



Single and double (table 21)

View A showing cleanout plug on main (table 22)

Table 21 Combination Y and 1/8 bend, single and double

Size (inches)	Dimensions in inches <sup>1</sup>										
	A'	B min.	C'	E	E'	F	G	H	R'	X	X'
2.....	2 3/4	3 3/4	4	6 1/4	7 1/4	10 1/4	4	3 3/4	3	8	4 1/4
3.....	3 3/4	4	4 1/4	8 1/4	9 1/4	13 1/4	5	5 1/4	3 3/4	10 1/4	7
4.....	4 3/4	4	5 1/4	9 1/4	12	15	5 1/4	6 1/4	4	12	9
5.....	5 3/4	4	5 1/4	11	14	16 1/4	5 1/4	8 1/4	4 1/4	13 1/4	11
6.....	6 3/4	4	5 1/4	12 1/4	15 1/4	18	5 1/4	10 1/4	5	15	12 1/4
3 by 2.....	3	4	4 1/4	7 1/4	8 1/4	11 1/4	4 1/4	4	3	9	5 1/4
4 by 2.....	3	4	4 1/4	8 1/4	8 1/4	12	3 1/4	4 1/4	3	9	6 1/4
4 by 3.....	3 3/4	4	4 1/4	9	10 1/4	13 1/4	4 1/4	5 1/4	3 3/4	10 1/4	7 1/4
5 by 2.....	3	4	4 1/4	8 1/4	9 1/4	12	3 3/4	5	3	9	6 1/4
5 by 3.....	3 3/4	4	4 1/4	9 1/4	10 1/4	13 1/4	4	6 1/4	3 3/4	10 1/4	8
5 by 4.....	3 3/4	4	5 1/4	10 1/4	12 1/4	15	4 1/4	7 1/4	4	12	9 1/4
6 by 2.....	3	4	4 1/4	9 1/4	9 1/4	12	2 1/4	5 1/4	3	9	7 1/4
6 by 3.....	3 3/4	4	4 1/4	10	11 1/4	13 1/4	3 3/4	6 1/4	3 3/4	10 1/4	8 1/4
6 by 4.....	3 3/4	4	5 1/4	10 1/4	13	15	4 1/4	7 1/4	4	12	10
6 by 5.....	3 3/4	4	5 1/4	11 1/4	14 1/4	16 1/4	5 1/4	9 1/4	4 1/4	13 1/4	11 1/4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2; for details of side inlets, see illustration below table 53.

NOTE.- Dimensions X and X' are laying lengths.

Table 22 Combination Y and 1/8 bend cleanout with screw plug on main<sup>1</sup> (view A)

Size (inches)	Dimensions in inches <sup>1</sup>		Min. I.P.S. tapping <sup>2</sup>
	E	F	
2.....	5 1/4	9 1/4	1 1/4
3.....	6 1/4	11 1/4	2 1/4
4.....	7 1/4	13 1/4	3 1/4

Size (inches)	Dimensions in inches <sup>1</sup>		Min. I.P.S. tapping <sup>2</sup>
	E	F	
5.....	9 1/4	14 1/4	4
6.....	10 1/4	16 1/4	5

<sup>1</sup> For dimensions not given in this table see table 21. For details of hubs and spigots, see tables 1 and 2.

<sup>2</sup> For details of tapping bosses, see table 54 and for details of screw plugs, see table 51.



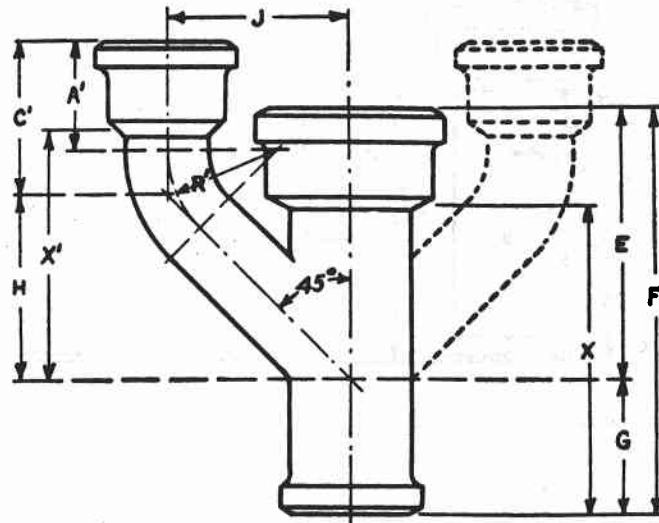


Table 23 Y branches, upright, single and double

Size (inches)	Dimensions in inches <sup>1</sup>									
	A'	C'	E	F	G	H	J	R'	X	X'
2-----	2½	4	6½	10½	4	4½	4½	3	8	6
3-----	3¼	4½	8½	13½	5	5½	5½	3½	10½	7½
4-----	3½	5½	9½	15	5½	6½	6½	4	12	8½
5-----	3½	5½	11	16½	5½	7½	7½	4½	13½	9½
6-----	3½	5½	12½	18	5½	8½	8½	5	15	11½
3 by 2----	3	4½	7½	11½	4½	5	5	3	9	6½
4 by 2----	3	4½	8½	12	3½	5½	5½	3	9	7½
4 by 3----	3½	4½	9	13½	4½	6	6	3½	10½	7½
5 by 2----	3	4½	8½	12	3½	6	6	3	9	7½
5 by 3----	3½	4½	9½	13½	4	6½	6½	3½	10½	8½
5 by 4----	3½	5½	10½	15	4½	7	7	4	12	9½
6 by 2----	3	4½	9½	12	2½	6½	6½	3	9	8½
6 by 3----	3½	4½	10	13½	3½	7	7	3½	10½	8½
6 by 4----	3½	5½	10½	15	4½	7½	7½	4	12	9½
6 by 5----	3½	5½	11½	16½	5½	8	8	4½	13½	10½

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimensions X and X' are laying lengths.

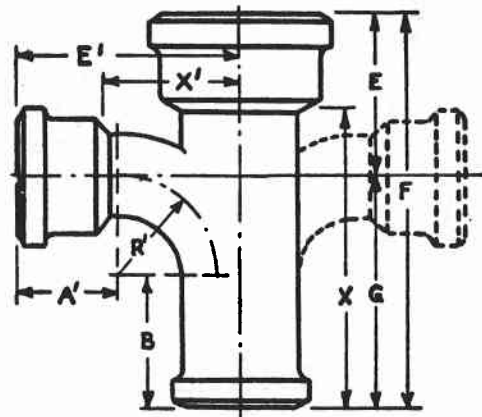
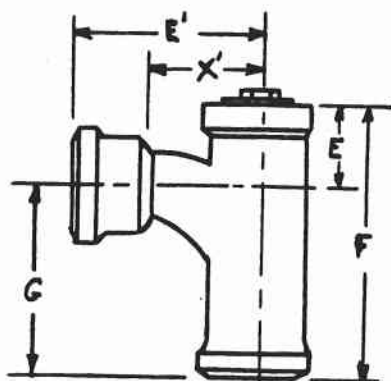


Table 24 Sanitary T branches, single and double

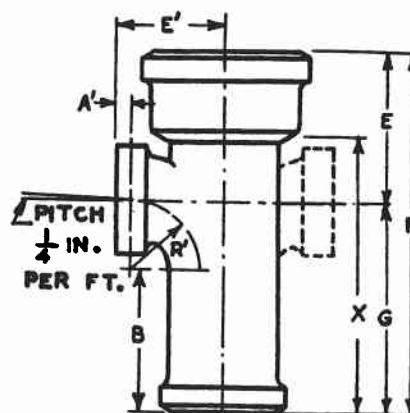
Size (inches)	Dimensions in inches <sup>1</sup>								
	A'	B	E	E'	F	G	R'	X	X'
2	2 1/4	3 1/4	4 1/4	5 1/4	10 1/4	6 1/4	2 1/2	8	2 1/4
3	3 1/4	4	5 1/4	6 1/4	12 1/4	7 1/4	3 1/2	10	4
4	3 1/2	4	6	7 1/2	14	8	4	11	4 1/2
5	3 1/2	4	6 1/2	8	15	8 1/2	4 1/2	12	5
6	3 1/2	4	7	8 1/2	16	9	5	13	5 1/2
8	4 1/4	5 1/4	8 1/4	10 1/4	20 1/4	11 1/4	3	17	6 1/4
10	4 1/4	5 1/4	9 1/4	11 1/4	22 1/4	12 1/4	7	19	7 1/4
12	5	7	11 1/4	13	26 1/4	15	8	22 1/4	8 1/4
15	5	7	13 1/4	14 1/4	29 1/4	16 1/4	9 1/2	25 1/4	10 1/4
3 by 2	3	4	4 1/4	6 1/4	11 1/4	7	3	9	4
4 by 2	3	4	5	7	12	7	3	9	4 1/2
4 by 3	3 1/4	4	5 1/4	7 1/4	13	7 1/2	3 1/2	10	4 1/2
5 by 2	3	4	5	7 1/2	12	7	3	9	5
5 by 3	3 1/4	4	5 1/4	7 1/4	13	7 1/2	3 1/2	10	5
5 by 4	3 1/2	4	6	8	14	8	4	11	5
6 by 2	3	4	5	8	12	7	3	9	5 1/2
6 by 3	3 1/4	4	5 1/4	8 1/4	13	7 1/2	3 1/2	10	5 1/2
6 by 4	3 1/2	4	6	8 1/2	14	8	4	11	5 1/2
6 by 5	3 1/2	4	6 1/2	8 1/2	15	8 1/2	4 1/2	12	5 1/2
8 by 2	3	5 1/4	5 1/4	9	14 1/2	8 1/4	3	11	6 1/4
8 by 3	3 1/4	5 1/4	6 1/4	9 1/4	15 1/2	9 1/4	3 1/2	12	6 1/4
8 by 4	3 1/2	5 1/4	6 1/4	9 1/2	16 1/4	9 1/2	4	13	6 1/2
8 by 5	3 1/2	5 1/4	7 1/4	9 1/2	17 1/4	10 1/4	4 1/2	14	6 1/2
8 by 6	3 1/2	5 1/4	7 1/4	9 1/2	18 1/4	10 1/4	5	15	6 1/2
10 by 4	3 1/2	5 1/4	6 1/4	10 1/2	16 1/4	9 1/4	4	13	7 1/4
10 by 5	3 1/2	5 1/4	7 1/4	10 1/2	17 1/4	10 1/4	4 1/2	14	7 1/4
10 by 6	3 1/2	5 1/4	7 1/4	10 1/2	18 1/4	10 1/4	5	15	7 1/4
10 by 8	4 1/4	5 1/4	8 1/4	11 1/4	20 1/4	11 1/4	6	17	7 1/4
12 by 4	3 1/2	7	7 1/4	11 1/4	18 1/4	11	4	14 1/2	8 1/4
12 by 5	3 1/2	7	8 1/4	11 1/4	19 1/4	11 1/4	4 1/2	15 1/2	8 1/4
12 by 6	3 1/2	7	8 1/4	11 1/4	20 1/4	12	5	16 1/2	8 1/2
12 by 8	4 1/4	7	9 1/4	12 1/4	22 1/4	13	6	18 1/2	8 1/2
12 by 10	4 1/4	7	10 1/4	12 1/4	24 1/4	14	7	20 1/2	8 1/2
15 by 6	3 1/2	7	8 1/4	13	20 1/4	12	5	16 1/2	10
15 by 8	4 1/4	7	9 1/4	13 1/4	22 1/4	13	6	18 1/2	10 1/4
15 by 10	4 1/4	7	10 1/4	13 1/4	24 1/4	14	7	20 1/2	10 1/4
15 by 12	5	7	11 1/4	14 1/4	26 1/4	15	8	22 1/2	10 1/4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2. For details of side inlets see illustration below table 53.

NOTE.- Dimensions X and X' are laying lengths.



(See table 25)



(See table 26)

Table 25 Sanitary T branch, cleanout plug on main

Size (inches)	Dimensions in inches <sup>1</sup>					Minimum I.P.S. Tapping <sup>2</sup>	
	E	E'	F	G	X'	'XH'	'SV'
2	3	5-1/4	9-1/4	6-1/4	2-3/4	1-1/2	1-1/2
3	3-5/8	6-3/4	11-1/8	7-1/2	4	2-1/2	2-1/2
4	4-1/8	7-1/2	12-1/8	8	4-1/2	3-1/2	3-1/2
5	4-5/8	8	13-1/8	8-1/2	5	4	4
6	5-1/8	8-1/2	14-1/8	9	5-1/2	5	5

<sup>1</sup> For details of hubs and spigots see tables 1 and 2. For dimensions not given in this table, see table 24.

<sup>2</sup> For details of tapping bosses, see table 54; and for details of screw plugs, see table 51.

Table 26 Sanitary T branches, tapped, single and double

Size (inches) (note 2)	Dimensions in inches <sup>1</sup>							
	A'	B	E	E'	F	G	R'	X
2 by 2.....	1 1/8	4	4 1/4	3 1/8	10 1/2	6 1/4	2 1/4	8
3 by 2.....	1 1/8	4 3/4	4 1/4	3 3/8	11 1/4	7	2 1/4	9
4 by 2.....	1 1/8	4 3/4	5	4 1/8	12	7	2 1/4	9
5 by 2.....	1 1/8	4 3/4	5	4 1/8	12	7	2 1/4	9
6 by 2.....	1 1/8	4 3/4	5	5 1/8	12	7	2 1/4	9

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2. For details of tapping bosses, see table 54.

NOTE 1.-Dimension X is the laying length.

NOTE 2.-All sizes of branches are furnished with 1-1/4 and 1-1/2 inch tappings, in addition to the 2 inch tapping, for which dimensions B, E', and R' (in inches) shall be as follows:

Size (inches)	B	E'	R'	Size (inches)	B	E'	R'
2.....	4 1/8	2 1/8	1 1/8	5.....	5 1/8	4 1/8	1 1/8
3.....	5 1/8	3 1/8	1 1/8	6.....	5 1/8	4 1/8	1 1/8
4.....	5 1/8	3 1/8	1 1/8				

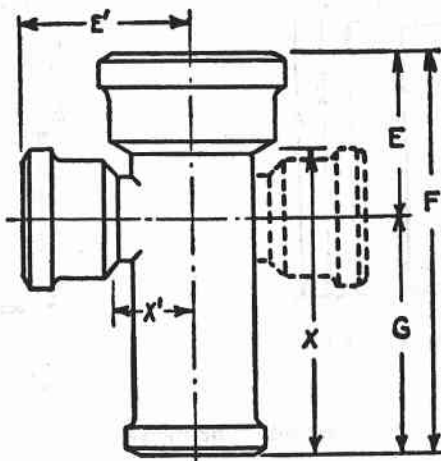


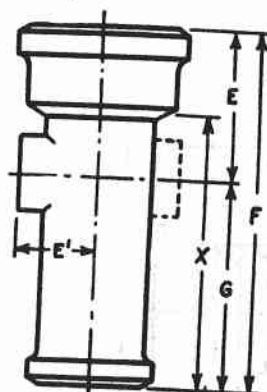
Table 27 T branches, single and double

Size (inches)	Dimensions in inches <sup>1</sup>					
	E	E'	F	G	X	X'
2	4 1/4	4 1/4	10 1/2	6 1/4	8	1 1/4
3	5 1/4	5 1/4	12 1/4	7 1/2	10	2 1/2
4	6	6	14	8	11	3
5	6 1/2	6 1/2	15	8 1/2	12	3 1/2
6	7	7	16	9	13	4
8	8 1/4	8 1/4	20 1/2	11 1/4	17	5 1/4
10	9 1/4	9 1/4	22 1/4	12 1/4	19	6 1/4
12	11 1/4	11 1/4	26 1/4	15	22 1/2	7 1/2
15	13 1/4	13 1/4	29 1/4	16 1/2	25 1/2	9
3 by 2	4 1/4	5	11 1/4	7	9	2 1/2
4 by 2	5	5 1/2	12	7	9	3
4 by 3	5 1/2	5 1/2	13	7 1/2	10	3
5 by 2	5	6	12	7	9	3 1/2
5 by 3	5 1/2	6 1/4	13	7 1/2	10	3 1/2
5 by 4	6	6 1/2	14	8	11	3 1/2
6 by 2	5	6 1/2	12	7	9	4
6 by 3	5 1/2	6 3/4	13	7 1/2	10	4
6 by 4	6	7	14	8	11	4
6 by 5	6 1/4	7	15	8 1/2	12	4
8 by 2	5 1/4	7 1/4	14 1/2	8 1/4	11	5 1/4
8 by 3	6 1/4	8	15 1/2	9 1/4	12	5 1/4
8 by 4	6 1/4	8 1/4	16 1/2	9 1/4	13	5 1/4
8 by 5	7 1/4	8 1/4	17 1/2	10 1/4	14	5 1/4
8 by 6	7 1/4	8 1/4	18 1/2	10 1/4	15	5 1/4
10 by 4	6 1/4	9 1/4	16 1/2	9 1/4	13	6 1/4
10 by 5	7 1/4	9 1/4	17 1/2	10 1/4	14	6 1/4
10 by 6	7 1/4	9 1/4	18 1/2	10 1/4	15	6 1/4
10 by 8	8 1/4	9 1/4	20 1/2	11 1/4	17	6 1/4
12 by 4	7 1/2	10 1/4	18 1/4	11 1/4	14 1/2	7 1/4
12 by 5	8	10 1/4	19 1/4	11 1/4	15 1/2	7 1/4
12 by 6	8 1/2	10 1/4	20 1/4	12 1/4	16 1/2	7 1/4
12 by 8	9 1/4	10 3/4	22 1/4	13	18 1/4	7 1/4
12 by 10	10 1/4	10 3/4	24 1/4	14	20 1/2	7 1/4
15 by 6	8 1/2	11 1/4	20 1/4	12 1/4	16 1/2	8 1/4
15 by 8	9 1/4	12 1/4	22 1/4	13	18 1/4	8 1/4
15 by 10	10 1/4	12 1/4	24 1/4	14	20 1/2	8 1/4
15 by 12	11 1/4	13 1/4	26 1/4	15	22 1/2	9

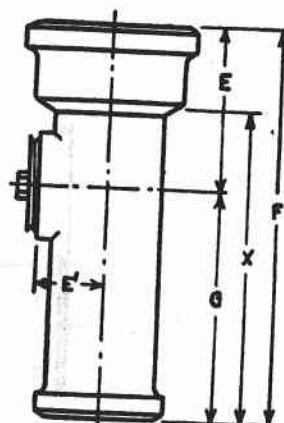
<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.

NOTE 1.-T branches are intended for venting and cleanout purposes only, and branch openings are not intended for use as waste inlets.

NOTE 2.-Dimensions X and X' are laying lengths.



(See table 28)



(See table 29)

Table 28 Tapped T branches, single and double

Size (inches) (note 3)	Dimensions in inches <sup>1</sup>					
	E	E'	F	G	X	I.P.S. Tapping
2.....	4½	2	10½	6½	8	1½-1½-2
3.....	4½	2½	11½	7	9	1½-1½-2
4.....	5	3	12	7	9	1½-1½-2
5.....	5	3½	12	7	9	1½-1½-2
6.....	5	4	12	7	9	1½-1½-2
3 by 2½.....	5½	2½	12½	7½	10	2½
4 by 2½.....	6	3	14	8	11	2½
4 by 3.....	6	3	14	8	11	3
5 by 2½.....	6½	3½	15	8½	12	2½
5 by 3.....	6½	3½	15	8½	12	3
5 by 4.....	6½	3½	15	8½	12	4
6 by 2½.....	7	4	16	9	13	2½
6 by 3.....	7	4	16	9	13	3
6 by 4.....	7	4	16	9	13	4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2. For details of tapping bosses, see table 54.

NOTE 1.-Tapped T branches are intended for venting and cleanout purposes only, and branch openings are not intended for use as waste inlets.

NOTE 2.- Dimension X is the laying length.

NOTE 3.- Dimensions and weights given apply to branches tapped 1-1/4, 1-1/2 and 2 inches, I.P.S.

Table 29 T branch cleanout with screw plug

Size (inches)	Dimensions in inches <sup>1</sup>					I.P.S. Tapping
	E	E'	F	G	X	
2.....	4½	2	10½	6½	8	1½
3.....	5½	2½	12½	7½	10	2½
4.....	6	3	14	8	11	3½
5.....	6½	3½	15	8½	12	4
6.....	7	4	16	9	13	4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2. For details of tapping bosses, see table 54.

NOTE.- Dimension X is the laying length.

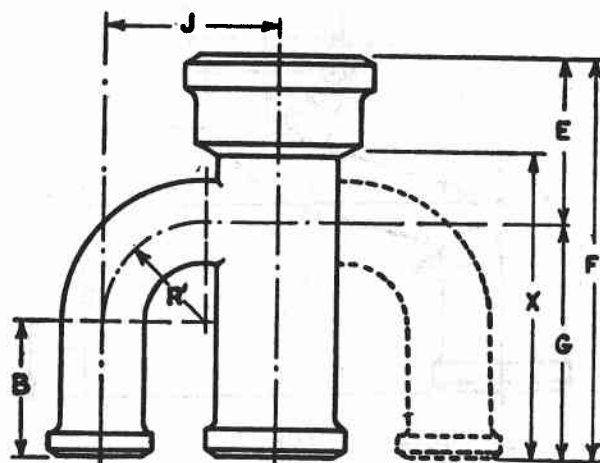
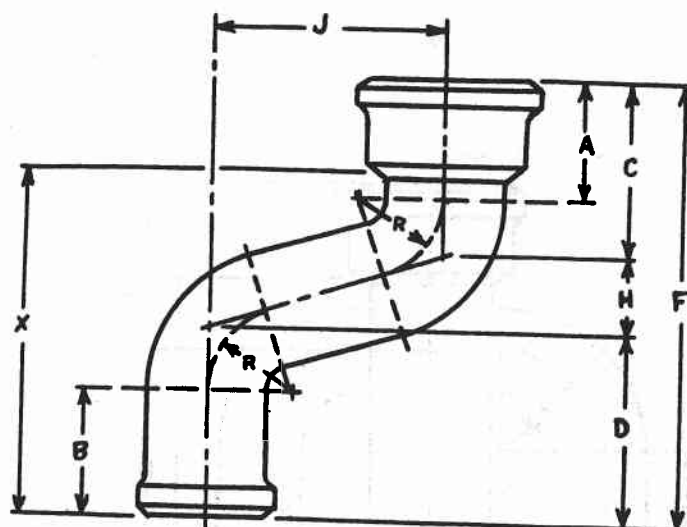


Table 30 Vent branches, single and double

Size (inches)	Dimensions in inches <sup>1</sup>						
	B	E	F	G	J	R'	X
2	3 1/4	4 1/4	10 1/4	6 1/4	4 1/4	3	8
3	4	5 1/4	12 1/4	7 1/4	5 1/4	3 1/4	10
4	4	6	14	8	6 1/4	4	11
5	4	6 1/2	15	8 1/2	7 1/4	4 1/4	12
6	4	7	16	9	8 1/4	5	13
3 by 2	4	4 1/4	11 1/4	7	5	3	9
4 by 2	4	5	12	7	5 1/4	3	9
4 by 3	4	5 1/4	13	7 1/4	6	3 1/4	10
5 by 2	4	5	12	7	6	3	9
5 by 3	4	5 1/4	13	7 1/4	6 1/4	3 1/4	10
5 by 4	4	6	14	8	7	4	11
6 by 2	4	5	12	7	6 1/4	3	9
6 by 3	4	5 1/4	13	7 1/4	7	3 1/4	10
6 by 4	4	6	14	8	7 1/4	4	11
6 by 5	4	6 1/4	15	8 1/4	8	4 1/4	12

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimension X is the laying length.



(See tables 31-35)

Table 31 Regular offsets, 2-inch

Size (inches)	Dimensions in inches <sup>1</sup>								
	A	B	C	D	F	H	J	R	X
2 by 2.....	2½	3½	3½	4½	9½	2	2	2	7½
2 by 4.....	3	4	4½	5½	11	1	4	2	8½
2 by 6.....	3	4	4½	5½	11½	1½	6	2	9
2 by 8.....	3	4	4½	5½	12	2	8	2	9½
2 by 10.....	3	4	4½	5½	12½	2½	10	2	10
2 by 12.....	3	4	4½	5½	13	3	12	2	10½
2 by 14.....	3	4	4½	5½	13½	3½	14	2	11
2 by 16.....	3	4	4½	5½	14	4	16	2	11½
2 by 18.....	3	4	4½	5½	14½	4½	18	2	12
2 by 20.....	3	4	4½	5½	15	5	20	2	12½
2 by 22.....	3	4	4½	5½	15½	5½	22	2	13
2 by 24.....	3	4	4½	5½	16	6	24	2	13½

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.

NOTE.- Dimension X is laying length

Table 32 Regular offsets, 3-inch

Size (inches)	Dimensions in inches <sup>1</sup>								
	A	B	C	D	F	H	J	R	X
3 by 2.....	3½	4	4½	5	11½	2	2	2½	8½
3 by 4.....	3½	4½	5½	6½	12½	1	4	2½	9½
3 by 6.....	3½	4½	5½	6½	12½	1½	6	2½	10
3 by 8.....	3½	4½	5½	6½	13½	2	8	2½	10½
3 by 10.....	3½	4½	5½	6½	13½	2½	10	2½	11
3 by 12.....	3½	4½	5½	6½	14½	3	12	2½	11½
3 by 14.....	3½	4½	5½	6½	14½	3½	14	2½	12
3 by 16.....	3½	4½	5½	6½	15½	4	16	2½	12½
3 by 18.....	3½	4½	5½	6½	15½	4½	18	2½	13
3 by 20.....	3½	4½	5½	6½	16½	5	20	2½	13½
3 by 22.....	3½	4½	5½	6½	16½	5½	22	2½	14
3 by 24.....	3½	4½	5½	6½	17½	6	24	2½	14½

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.

NOTE.- Dimension X is laying length.

Table 33 Regular offsets, 4-inch

Size (inches)	Dimensions in inches <sup>1</sup>								
	A	B	C	D	F	H	J	R	X
4 by 2.....	3½	4	4¼	5¼	12	2	2	3	9
4 by 4.....	3½	4	4¼	5¼	14	4	4	3	11
4 by 6.....	3½	4¼	5¼	6¼	14	1½	6	3	11
4 by 8.....	3½	4¼	5¼	6¼	14½	2	8	3	11½
4 by 10.....	3½	4¼	5¼	6¼	15	2½	10	3	12
4 by 12.....	3½	4¼	5¼	6¼	15½	3	12	3	12½
4 by 14.....	3½	4¼	5¼	6¼	16	3½	14	3	13
4 by 16.....	3½	4¼	5¼	6¼	16½	4	16	3	13½
4 by 18.....	3½	4¼	5¼	6¼	17	4½	18	3	14
4 by 20.....	3½	4¼	5¼	6¼	17½	5	20	3	14½
4 by 22.....	3½	4¼	5¼	6¼	18	5½	22	3	15
4 by 24.....	3½	4¼	5¼	6¼	18½	6	24	3	15½

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimension X is laying length.

Table 34 Regular offsets, 5-inch

Size (inches)	Dimensions in inches <sup>1</sup>								
	A	B	C	D	F	H	J	R	X
5 by 2.....	3½	4½	4½ <sup>10</sup>	5½ <sup>10</sup>	12½	2	2	3½	9½
5 by 4.....	3½	4½	4½ <sup>10</sup>	5½ <sup>10</sup>	14½	4	4	3½	11½
5 by 6.....	3½	4½	6¼	7¼	15	1½	6	3½	12
5 by 8.....	3½	4½	6¼	7¼	15½	2	8	3½	12½
5 by 10.....	3½	4½	6¼	7¼	16	2½	10	3½	13
5 by 12.....	3½	4½	6¼	7¼	16½	3	12	3½	13½
5 by 14.....	3½	4½	6¼	7¼	17	3½	14	3½	14
5 by 16.....	3½	4½	6¼	7¼	17½	4	16	3½	14½
5 by 18.....	3½	4½	6¼	7¼	18	4½	18	3½	15
5 by 20.....	3½	4½	6¼	7¼	18½	5	20	3½	15½
5 by 22.....	3½	4½	6¼	7¼	19	5½	22	3½	16
5 by 24.....	3½	4½	6¼	7¼	19½	6	24	3½	16½

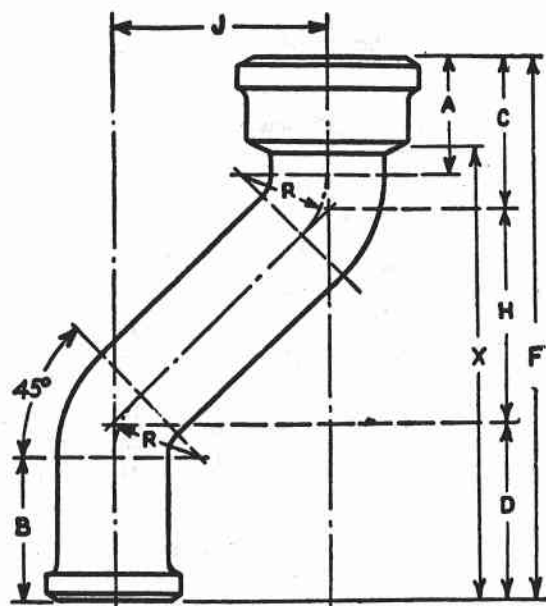
<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimension X is laying length.



Table 35 Regular offsets, 6-inch

Size (inches)	Dimensions in inches <sup>1</sup>								
	A	B	C	D	F	H	J	R	X
6 by 2.....	3½	4½	5	5½	13	2½	2	4	10
6 by 4.....	3½	4½	5½	5½	15	4	4	4	12
6 by 6.....	3½	4½	6	7½	16	1½	6	4	13
6 by 8.....	3½	4½	6½	7½	16½	2	8	4	13½
6 by 10.....	3½	4½	6½	7½	17	2½	10	4	14
6 by 12.....	3½	4½	6½	7½	17½	3	12	4	14½
6 by 14.....	3½	4½	6½	7½	18	3½	14	4	15
6 by 16.....	3½	4½	6½	7½	18½	4	16	4	15½
6 by 18.....	3½	4½	6½	7½	19	4½	18	4	16
6 by 20.....	3½	4½	6½	7½	19½	5	20	4	16½
6 by 22.....	3½	4½	6½	7½	20	5½	22	4	17
6 by 24.....	3½	4½	6½	7½	20½	6	24	4	17½

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimension X is laying length.



(See tables 36-40)

Table 36 1/8 Bend offset, 2-inch

Size (inches)	Dimensions in inches <sup>1</sup>								
	A	B	C	D	F	H	J	R	X
2 by 2.....	2 1/4	3 1/4	3 1/4	4 1/4	9 1/4	2	2	2	7 1/4
2 by 4.....	2 1/4	3 1/4	3 1/4	4 1/4	11 1/4	4	4	2	9 1/4
2 by 6.....	2 1/4	3 1/4	3 1/4	4 1/4	13 1/4	6	6	2	11 1/4
2 by 8.....	2 1/4	3 1/4	3 1/4	4 1/4	15 1/4	8	8	2	13 1/4
2 by 10.....	2 1/4	3 1/4	3 1/4	4 1/4	17 1/4	10	10	2	15 1/4
2 by 12.....	2 1/4	3 1/4	3 1/4	4 1/4	19 1/4	12	12	2	17 1/4
2 by 14.....	2 1/4	3 1/4	3 1/4	4 1/4	21 1/4	14	14	2	19 1/4
2 by 16.....	2 1/4	3 1/4	3 1/4	4 1/4	23 1/4	16	16	2	21 1/4
2 by 18.....	2 1/4	3 1/4	3 1/4	4 1/4	25 1/4	18	18	2	23 1/4
2 by 20.....	2 1/4	3 1/4	3 1/4	4 1/4	27 1/4	20	20	2	25 1/4
2 by 22.....	2 1/4	3 1/4	3 1/4	4 1/4	29 1/4	22	22	2	27 1/4
2 by 24.....	2 1/4	3 1/4	3 1/4	4 1/4	31 1/4	24	24	2	29 1/4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimension X is the laying length.

Table 37 1/8 Bend offset, 3-inch

Size (inches)	Dimensions in inches <sup>1</sup>								
	A	B	C	D	F	H	J	R	X
3 by 2.....	3 1/4	4	4 1/4	5	11 1/4	2	2	2 1/4	8 1/4
3 by 4.....	3 1/4	4	4 1/4	5	13 1/4	4	4	2 1/4	10 1/4
3 by 6.....	3 1/4	4	4 1/4	5	15 1/4	6	6	2 1/4	12 1/4
3 by 8.....	3 1/4	4	4 1/4	5	17 1/4	8	8	2 1/4	14 1/4
3 by 10.....	3 1/4	4	4 1/4	5	19 1/4	10	10	2 1/4	16 1/4
3 by 12.....	3 1/4	4	4 1/4	5	21 1/4	12	12	2 1/4	18 1/4
3 by 14.....	3 1/4	4	4 1/4	5	23 1/4	14	14	2 1/4	20 1/4
3 by 16.....	3 1/4	4	4 1/4	5	25 1/4	16	16	2 1/4	22 1/4
3 by 18.....	3 1/4	4	4 1/4	5	27 1/4	18	18	2 1/4	24 1/4
3 by 20.....	3 1/4	4	4 1/4	5	29 1/4	20	20	2 1/4	26 1/4
3 by 22.....	3 1/4	4	4 1/4	5	31 1/4	22	22	2 1/4	28 1/4
3 by 24.....	3 1/4	4	4 1/4	5	33 1/4	24	24	2 1/4	30 1/4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimension X is the laying length.

Table 38 1/8 Bend offset, 4-inch

- 34 -

Size (inches)	Dimensions in inches <sup>1</sup>								
	A	B	C	D	F	H	J	R	X
4 by 2.....	3½	4	4½	5½	12	2	2	3	9
4 by 4.....	3½	4	4½	5½	14	4	4	3	11
4 by 6.....	3½	4	4½	5½	16	6	6	3	13
4 by 8.....	3½	4	4½	5½	18	8	8	3	15
4 by 10.....	3½	4	4½	5½	20	10	10	3	17
4 by 12.....	3½	4	4½	5½	22	12	12	3	19
4 by 14.....	3½	4	4½	5½	24	14	14	3	21
4 by 16.....	3½	4	4½	5½	26	16	16	3	23
4 by 18.....	3½	4	4½	5½	28	18	18	3	25
4 by 20.....	3½	4	4½	5½	30	20	20	3	27
4 by 22.....	3½	4	4½	5½	32	22	22	3	29
4 by 24.....	3½	4	4½	5½	34	24	24	3	31

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimension X is the laying length.

Table 39 1/8 Bend offset, 5-inch

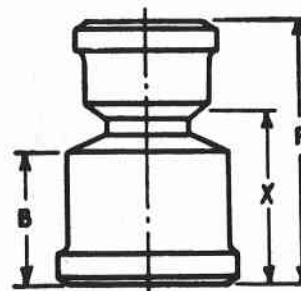
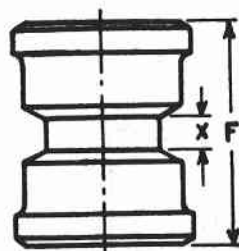
Size (inches)	Dimensions in inches <sup>1</sup>								
	A	B	C	D	F	H	J	R	X
5 by 2.....	3½	4½	4½½	5½	12½	2	2	3½	9½
5 by 4.....	3½	4½	4½½	5½	14½	4	4	3½	11½
5 by 6.....	3½	4½	4½½	5½	16½	6	6	3½	13½
5 by 8.....	3½	4½	4½½	5½	18½	8	8	3½	15½
5 by 10.....	3½	4½	4½½	5½	20½	10	10	3½	17½
5 by 12.....	3½	4½	4½½	5½	22½	12	12	3½	19½
5 by 14.....	3½	4½	4½½	5½	24½	14	14	3½	21½
5 by 16.....	3½	4½	4½½	5½	26½	16	16	3½	23½
5 by 18.....	3½	4½	4½½	5½	28½	18	18	3½	25½
5 by 20.....	3½	4½	4½½	5½	30½	20	20	3½	27½
5 by 22.....	3½	4½	4½½	5½	32½	22	22	3½	29½
5 by 24.....	3½	4½	4½½	5½	34½	24	24	3½	31½

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimension X is the laying length.

Table 40 1/8 Bend offset, 6-inch

Size (inches)	Dimensions in inches <sup>1</sup>								
	A	B	C	D	F	H	J	R	X
6 by 2.....	3½	4½	5	5½	13	2½	2	4	10
6 by 4.....	3½	4½	5½	5½½	15	4	4	4	12
6 by 6.....	3½	4½	5½	5½½	17	6	6	4	14
6 by 8.....	3½	4½	5½	5½½	19	8	8	4	16
6 by 10.....	3½	4½	5½	5½½	21	10	10	4	18
6 by 12.....	3½	4½	5½	5½½	23	12	12	4	20
6 by 14.....	3½	4½	5½	5½½	25	14	14	4	22
6 by 16.....	3½	4½	5½	5½½	27	16	16	4	24
6 by 18.....	3½	4½	5½	5½½	29	18	18	4	26
6 by 20.....	3½	4½	5½	5½½	31	20	20	4	28
6 by 22.....	3½	4½	5½	5½½	33	22	22	4	30
6 by 24.....	3½	4½	5½	5½½	35	24	24	4	32

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimension X is the laying length.



(Illustration for tables 41 and 42)

(See table 43)

Table 41 Double Hub

Size <sup>1</sup> (inches)	F	X	Size <sup>1</sup> (inches)	F	X
	<i>Inches</i>	<i>Inch</i>		<i>Inches</i>	<i>Inches</i>
2.....	6	1	8.....	8½	1½
3.....	6½	1	10.....	8½	1½
4.....	7	1	12.....	10	1½
5.....	7	1	15.....	10	1½
6.....	7	1			

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.

NOTE.- Dimension X is the laying length.

Table 42 Long Double Hubs

Size <sup>1</sup> (inches)	F	X
	<i>Inches</i>	<i>Inches</i>
2 x 30	30	25
3 x 30	30	24-1/2
4 x 30	30	24

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.

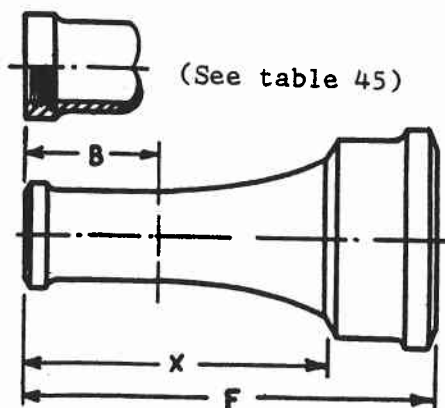
NOTE.-Dimension X is the laying length.

Table 43 Reducers

Size <sup>1</sup> (inches)	B	F	X	Size <sup>1</sup> (inches)	B	F	X
	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>		<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
3 by 2.....	3¾	7¼	4¾	8 by 6.....	4½	9	6
4 by 2.....	4	7½	5	10 by 4.....	4½	9	6
4 by 3.....	4	7½	5	10 by 5.....	4½	9	6
5 by 2.....	4	7½	5	10 by 6.....	4½	9	6
5 by 3.....	4	7½	5	10 by 8.....	4½	9½	6
5 by 4.....	4	8	5	12 by 4.....	5¼	9½	6½
6 by 2.....	4	7½	5	12 by 5.....	5¼	9½	6½
6 by 3.....	4	7½	5	12 by 6.....	5¼	9½	6½
6 by 4.....	4	8	5	12 by 8.....	5¼	10	6½
6 by 5.....	4	8	5	12 by 10.....	5¼	10	6½
8 by 2.....	4½	8½	6	15 by 6.....	5¼	9½	6½
8 by 3.....	4½	8½	6	15 by 8.....	5¼	10	6½
8 by 4.....	4½	9	6	15 by 10.....	5¼	10	6½
8 by 5.....	4½	9	6	15 by 12.....	5¼	10½	6½

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.

NOTE.- Dimension X is the laying length.



(See table 44)

Table 44 Increaser<sup>1</sup>

Size (inches)	B	F	X	Size (inches)	B	F	X
	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>		<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
2 by 3.....	4	11 1/4	9	5 by 8.....	4	15 1/4	12
2 by 4.....	4	12	9	5 by 10.....	4	15 1/4	12
2 by 5.....	4	12	9	6 by 8.....	4	15 1/4	12
2 by 6.....	4	12	9	6 by 10.....	4	15 1/4	12
3 by 4.....	4	12	9	6 by 12.....	4	16 1/4	12
3 by 5.....	4	12	9	8 by 10.....	5 1/2	15 1/4	12
3 by 6.....	4	12	9	8 by 12.....	5 1/2	16 1/4	12
4 by 5.....	4	12	9	8 by 15.....	5 1/2	16 1/4	12
4 by 6.....	4	12	9	10 by 12.....	5 1/2	16 1/4	12
4 by 8.....	4	15 1/4	12	10 by 15.....	5 1/2	16 1/4	12
5 by 6.....	4	12	9	12 by 15.....	7	16 1/4	12

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2.  
NOTE.- Dimension X is the laying length.

Table 45 Increaser tapped<sup>1</sup>

Size (inches) (note 1)	B	F	X
	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
1 1/4 by 2.....	4	10 1/4	8
2 by 3.....	4	11 1/4	9
2 by 4.....	4	12	9
2 by 5.....	4	12	9
2 by 6.....	4	12	9

<sup>1</sup> For details of hubs, see tables 1 and 2; for details of tapping bosses, see table 54.  
NOTE 1.-Tapping boss may be tapped for 1-1/4, 1-1/2, or 2 inch pipe, except size 1-1/2 by 2 inches, which may be tapped 1-1/4 or 1-1/2 inches only.  
NOTE 2.-Dimension X is the laying length.

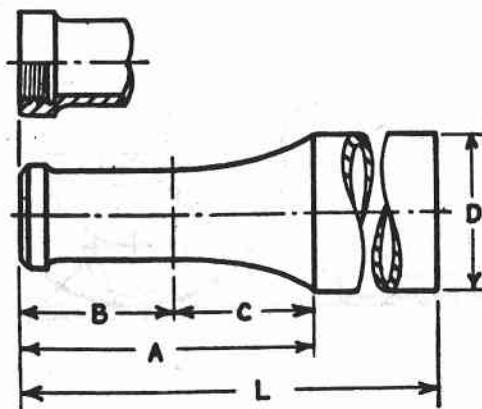


Table 46 Long Increasers, Spigot and Tapped

Sizes (inches) <sup>1</sup> (Note 1)	A	B	C (Note 2)	L (Note 3)	D	
					'XH'	'SV'
	in.	in.	in.	in.	in.	in.
2 by 4 by 24.....	8½	4	4½	24	4½	4½
2 by 4 by 30.....	8½	4	4½	30	4½	4½
2 by 4 by 36.....	8½	4	4½	36	4½	4½
2 by 4 by 48.....	8½	4	4½	48	4½	4½
3 by 4 by 24.....	8½	4	4½	24	4½	4½
3 by 4 by 30.....	8½	4	4½	30	4½	4½
3 by 4 by 36.....	8½	4	4½	36	4½	4½
3 by 4 by 48.....	8½	4	4½	48	4½	4½
4 by 5 by 24.....	8½	4	4½	24	5½	5½
4 by 5 by 30.....	8½	4	4½	30	5½	5½
4 by 5 by 36.....	8½	4	4½	36	5½	5½
4 by 5 by 48.....	8½	4	4½	48	5½	5½
4 by 6 by 24.....	8½	4	4½	24	6½	6½
4 by 6 by 30.....	8½	4	4½	30	6½	6½
4 by 6 by 36.....	8½	4	4½	36	6½	6½
4 by 6 by 48.....	8½	4	4½	48	6½	6½

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2;  
for details of tapping bosses, see table 54.

NOTE 1.-First size given for long increasers is spigot size.  
First size given for long increasers, tapped, is  
tapping size.

NOTE 2.-All markings shall be on small end and in space  
indicated by dimension C.

NOTE 3.-Dimension L is the laying length.

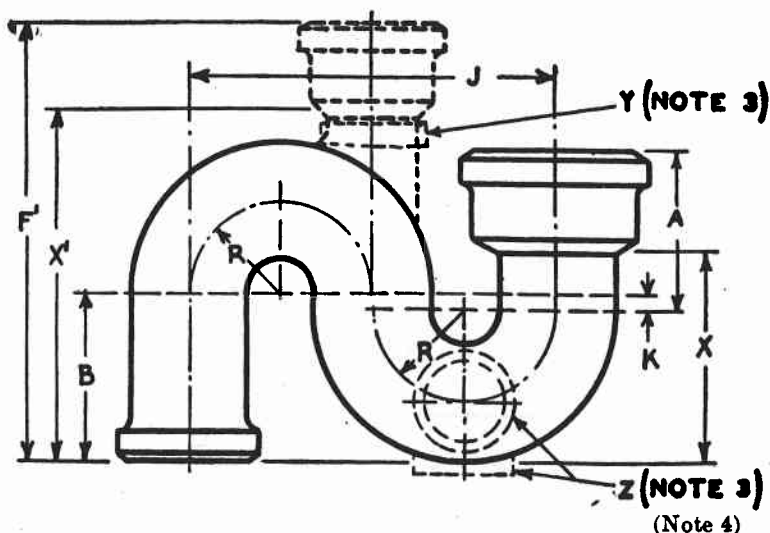


Table 47 S traps with or without vent and cleanout

Size (inches)	Dimensions in inches <sup>1</sup>							
	A	B	F'	J	K	R	X	X'
2 by 2 . . . . .	3	3½	10	8	1½	2	4	7½
3 by 2 . . . . .	4½	4½	12	10	1½	2½	5½	9½
3 by 3 . . . . .	4½	4½	12½	10	1½	2½	5½	9½
4 by 2 . . . . .	5½	5½	14	12	1½	3	7½	11½
4 by 3 . . . . .	5½	5½	14½	12	1½	3	7½	11½
4 by 4 . . . . .	5½	5½	14½	12	1½	3	7½	11½
5 by 4 . . . . .	6½	6½	16½	14	1½	3½	9½	13½
5 by 5 . . . . .	6½	6½	16½	14	1½	3½	9½	13½
6 by 4 . . . . .	7½	7½	18½	16	1½	4	11½	15½
6 by 6 . . . . .	7½	7½	18½	16	1½	4	11½	15½

- <sup>1</sup> For details of hubs and spigots, see tables 1 and 2. For details of tapping bosses, see table 54.
- NOTE 1.-A minimum water seal of 2 inches is provided for the 2-inch size, and of 2-1/2 inches for sizes 3 to 6 inches, inclusive.
- NOTE 2.-Dimensions J, X, and X' are laying lengths.
- NOTE 3.-Traps with tapped vent and cleanout shall have tappings of sizes indicated below.
- NOTE 4.-Tap at position Z shall be specified as right side, left side, or bottom.

Size (inches)	I.P.S. tapping at Y	I.P.S. tapping at Z	Size (inches)	I.P.S. tapping at Y	I.P.S. tapping at Z
2 . . . . .	inches 1½	inches 1½	5 . . . . .	inches 4	inches 3
3 . . . . .	2½	1½	6 . . . . .	4	3
4 . . . . .	3½	3			

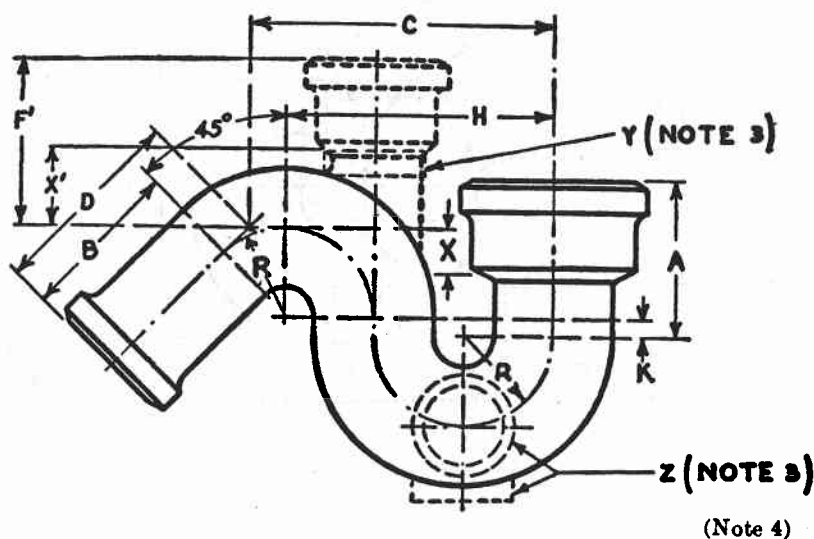


Table 48 3/4 S traps with or without vent and cleanout

Size (inches)	Dimensions in inches <sup>1</sup> (Notes 1 and 2)									
	A	B	C	D	F'	H	K	R	X	X'
2 by 2 . .	3	3½	6½	4½	4½	6	--	2	1½	2
3 by 2 . .	4½	4½	8½	5½	5	7½	½	2½	1½	2½
3 by 3 . .	4½	4½	8½	5½	5½	7½	½	2½	1½	2½
4 by 2 . .	5½	5	10½	6½	5½	9	½	3	1	3
4 by 3 . .	5½	5	10½	6½	5½	9	½	3	1	3
4 by 4 . .	5½	5	10½	6½	6	9	½	3	1	3
5 by 4 . .	6½	5	11½	6½	6½	10½	½	3½	½	3½
5 by 5 . .	6½	5	11½	6½	6½	10½	½	3½	½	3½
6 by 4 . .	7½	5	13½	6½	7	12	½	4	--	4
6 by 6 . .	7½	5	13½	6½	7	12	½	4	--	4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2. For details of tapping bosses, see table 54.

NOTE 1.-A minimum water seal of 2 inches if provided for the 2-inch size, and of 2-1/2 inches for sizes 3 to 6 inches, inclusive.

NOTE 2.-Dimensions C, D, X, and X' are laying lengths.

NOTE 3.-For traps with tapping at Y and Z, see table 47, note 3.

NOTE 4.-Tap at position Z shall be specified as right side, left side, or bottom.



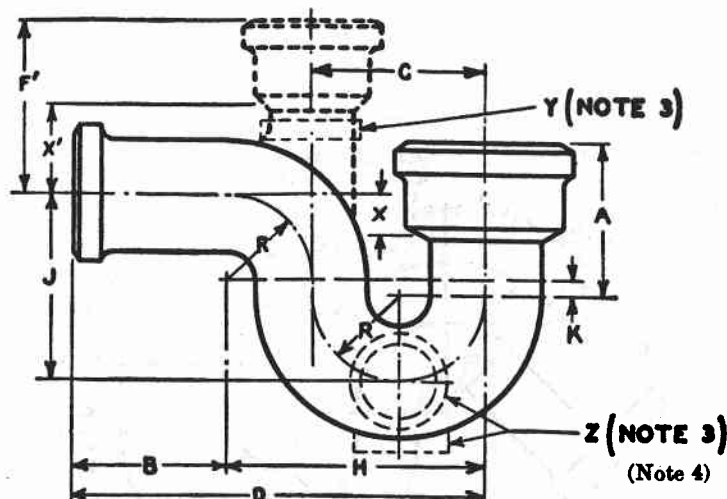


Table 49 1/2 S traps with or without vent and cleanout

Size (inches)	Dimensions in inches <sup>1</sup> (Notes 1 and 2)										
	A	B	C	D	F'	H	J	K	R	X	X'
2 by 2	3	3 1/2	4	9 1/2	4 1/2	6	4		2	1 1/2	2
3 by 2	4 1/2	4 1/2	5	12	5	7 1/2	5 1/2	1/2	2 1/2	1 1/2	2 1/2
3 by 3	4 1/2	4 1/2	5	12	5 1/2	7 1/2	5 1/2	1/2	2 1/2	1 1/2	2 1/2
4 by 2	5 1/2	5	6	14	5 1/2	9	6 1/2	1/2	3	1	3
4 by 3	5 1/2	5	6	14	5 1/2	9	6 1/2	1/2	3	1	3
4 by 4	5 1/2	5	6	14	6	9	6 1/2	1/2	3	1	3
5 by 4	6 1/2	5	7	15 1/2	6 1/2	10 1/2	7 1/2	1/2	3 1/2	1 1/2	3 1/2
5 by 5	6 1/2	5	7	15 1/2	6 1/2	10 1/2	7 1/2	1/2	3 1/2	1 1/2	3 1/2
6 by 4	7 1/2	5	8	17	7	12	8 1/2	1/2	4		4
6 by 6	7 1/2	5	8	17	7	12	8 1/2	1/2	4		4
8 by 4	10	7	10	22	8 1/2	15	11	1	5	1 1/2	5 1/2
8 by 6	10	7	10	22	8 1/2	15	11	1	5	1 1/2	5 1/2
10 by 6	12	7	12	25	9 1/2	18	13	1	6	1 1/2	6 1/2
12 by 6	13 1/2	8	15	30 1/2	10 1/2	22 1/2	15		7 1/2	1 1/2	7 1/2
12 by 8	13 1/2	8	15	30 1/2	10 1/2	22 1/2	15		7 1/2	1 1/2	7 1/2
15 by 8	16 1/2	8	18 1/2	35 1/2	12 1/2	27 1/2	18 1/2		9 1/2	3 1/2	8 1/2

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2. For details of tapping bosses, see table 54.

NOTE 1.-A minimum water seal of 2 inches if provided for the 2-inch size; of 2-1/2 inches for sizes 3 to 6 inches, inclusive; of 3 inches for sizes 8 to 12 inches, inclusive; and of 3-1/2 inches for the 15 inch size.

NOTE 2.-Dimensions D, X, and X' are laying lengths. Dimension X is measured below the horizontal center line on sizes 5 by 5 inches and smaller, and above the horizontal center line on sizes 8 by 4 inches and larger.

NOTE 3.-Traps with tapped vent and cleanout shall have tappings of sizes indicated below.

NOTE 4.-Tap at position Z shall be specified as right side, left side, or bottom.

Size (inches)	I.P.S. tapping at Y	I.P.S. tapping at Z	Size (inches)	I.P.S. tapping at Y	I.P.S. tapping at Z
2	Inches 1 1/2	Inches 1 1/2	8	Inches None	Inches 3
3	2 1/2	1 1/2	10	None	3
4	3 1/2	3	12	None	3
5	4	3	15	None	3
6	4	3			

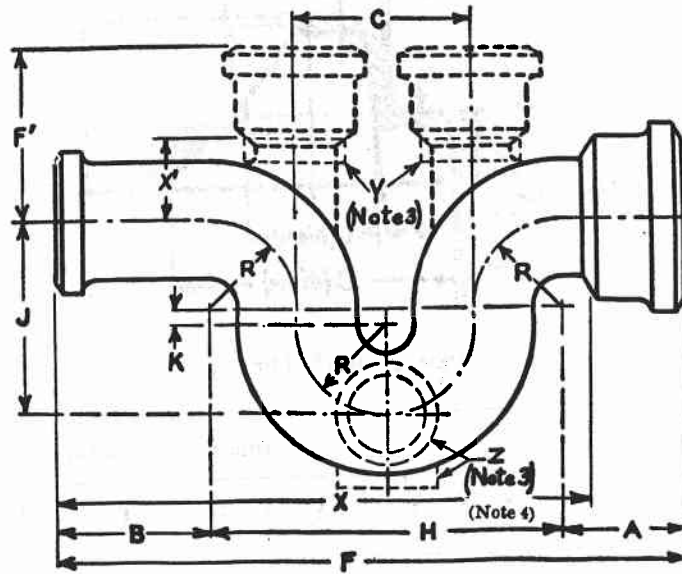


Table 50 Running traps with or without single or double vents and cleanout

Size (inches)	Dimensions in inches <sup>1</sup> (Notes 1 and 2)										
	A	B	C	F	F'	H	J	K	R	X	X'
2 by 2---	3	3 1/4	4	14 1/2	4 1/2	8	4	---	2	12	2
3 by 2---	3 1/4	4 1/4	5	17 1/4	5	10	5 1/2	1/2	2 1/2	15	2 1/2
3 by 3---	3 1/4	4 1/4	5	17 1/4	5 1/4	10	5 1/2	1/2	2 1/2	15	2 1/2
4 by 2---	3 1/4	5	6	20 1/2	5 1/2	12	6 1/2	1/2	3	17 1/2	3
4 by 3---	3 1/4	5	6	20 1/2	5 1/4	12	6 1/2	1/2	3	17 1/2	3
4 by 4---	3 1/4	5	6	20 1/2	6	12	6 1/2	1/2	3	17 1/2	3
5 by 4---	3 1/4	5	7	22 1/2	6 1/2	14	7 1/2	1/2	3 1/2	19 1/2	3 1/2
5 by 5---	3 1/4	5	7	22 1/2	6 1/2	14	7 1/2	1/2	3 1/2	19 1/2	3 1/2
6 by 4---	3 1/4	5	8	24 1/2	7	16	8 1/2	1/2	4	21 1/2	4
6 by 6---	3 1/4	5	8	24 1/2	7	16	8 1/2	1/2	4	21 1/2	4
8 by 4---	4 1/4	7	10	31 1/4	8 1/4	20	11	1	5	27 1/4	5 1/4
8 by 6---	4 1/4	7	10	31 1/4	8 1/4	20	11	1	5	27 1/4	5 1/4
10 by 6---	4 1/4	7	12	35 1/4	9 1/4	24	13	1	6	31 1/4	6 1/4
12 by 6---	5	8	15	43	10 1/4	30	15	---	7 1/2	38 1/4	7 1/2
12 by 8---	5	8	15	43	10 1/4	30	15	---	7 1/2	38 1/4	7 1/2
15 by 8---	5	8	18 1/4	50	12 1/4	37	18 1/2	---	9 1/4	45 1/4	8 1/4

<sup>1</sup> For details of hubs and spigots, see tables 1 and 2. For details of tapping bosses, see table 54.

NOTE 1.-A minimum water seal of 2 inches is provided for the 2-inch size; of 2-1/2 inches for sizes 3 to 6 inches, inclusive; of 3 inches for sizes 8 to 12 inches, inclusive; and of 3-1/2 inches for the 15-inch size.

NOTE 2.-Dimensions X and X' are laying lengths.

NOTE 3.-For traps with tapping at Y and Z, see table 49, note 3.

NOTE 4.-Tap at position Z shall be specified as right side, left side, or bottom

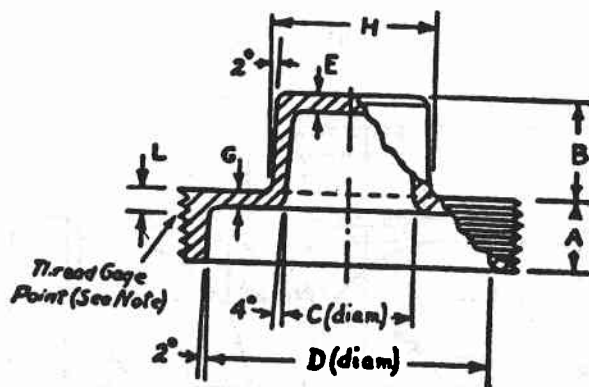


Table 51 Screw plugs<sup>1</sup> (brass) 'XH' and 'SV'

Size (inches)	Dimensions in inches							
	A	B	C	D	E	G	Across flats H <sup>1</sup>	L (see note)
1 1/4	1/2	1/2	3/4	1 1/8	5/8	1/4	1	3/4
1 1/2	5/8	3/4	1	1 1/4	3/4	1/4	1	3/4
2	3/4	1	1 1/8	2	3/4	1/4	1 1/4	1 1/4
2 1/4	3/4	1	1 1/8	2 1/8	3/4	1/4	1 1/4	1 1/4
3	3/4	1	1 1/8	2 1/8	3/4	1/4	1 1/4	1 1/4
3 1/4	3/4	1	1 1/8	2 1/8	3/4	1/4	1 1/4	1 1/4
4	3/4	1	1 1/8	3 1/8	3/4	1/4	1 1/4	1 1/4
5	1	1	1 1/8	4 1/8	3/4	1/4	2	1 1/4
6	1	1	1 1/8	5 1/8	3/4	1/4	2 1/4	1 1/4

<sup>1</sup> Heads of plugs shall be either square or hexagonal. Dimension H is taken between opposite sides of either style used.

NOTE.—When thread gage is screwed tightly on plug by hand, large end of gage shall be the distance "L"  $\pm$  1-1/2 turns, from surface of plug.

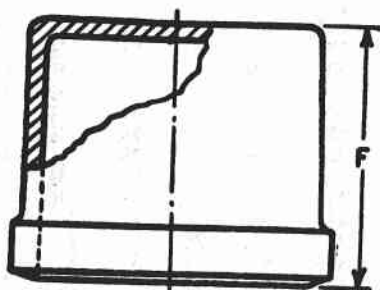
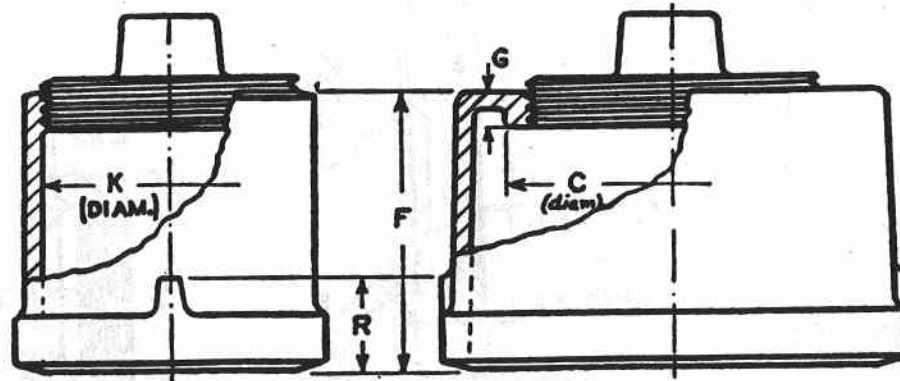


Table 52 Plugs for hub<sup>1</sup>

Size (inches)	F	Size (inches)	F
2	Inches 3 1/4	8	Inches 4 1/4
3	3 3/4	10	4 3/4
4	4	12	5 1/4
5	4	15	5 3/4
6	4		

<sup>1</sup> For dimensions of open end (spigot) and wall thickness, see tables 1 and 2.



Sizes 6-inch and smaller.

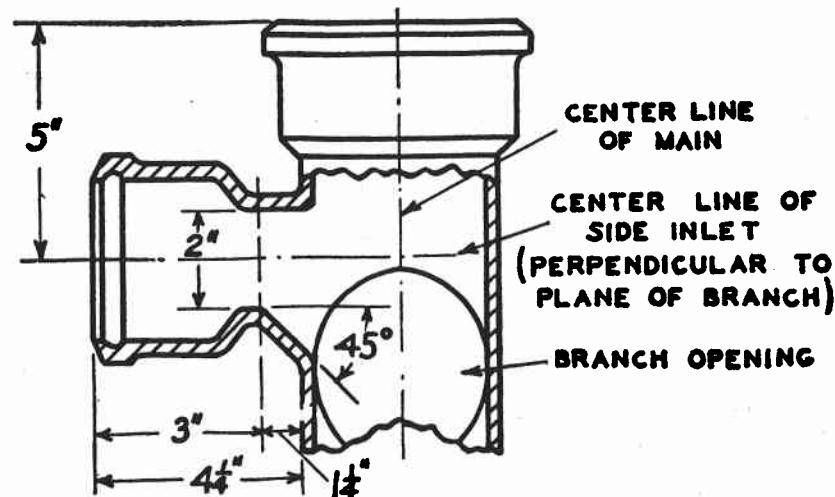
Sizes 8-inch and larger.

Table 53 Iron body ferrules with brass screw plug

Size (inches)	Dimensions in inches <sup>1</sup>					
	C	F	I.P.S. tapping	Tapping depth of G	K	R
2.....	-----	3½	1½	½	2	1¼
3.....	-----	3¾	2½	¾	3	1¾
4.....	-----	4¼	3½	¾	4	1½
5.....	-----	4¾	4	¾	5	1½
6.....	-----	4¾	5	¾	6	1½
8.....	7½	4½	6	¾	8	1½
10.....	7½	4½	6	¾	10	1½
12.....	7½	5¼	6	¾	12	2½
15.....	7½	5¼	6	¾	15	2½

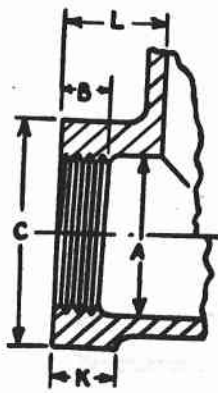
<sup>1</sup> For dimensions of open end (spigot) and wall thickness, see tables 1 and 2.

NOTE 1.-Tappings for sizes 2 inch to 6 inch, inclusive, allow entrance for testing plugs. See table 51 for screw plugs.

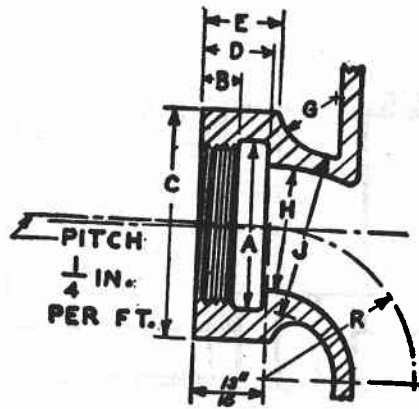


Note 2.—Dimensions and location of 2-inch side inlet for single or double sanitary T branches and Y branches are shown above.

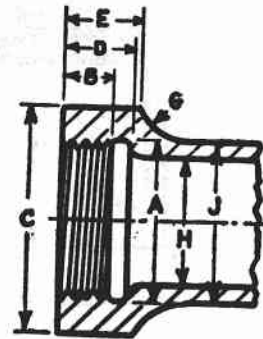
Single and double sanitary T branches and single and double Y branches with 2-inch side inlets are standard in the following sizes only: 4- by 3- by 2-inch; 4- by 4- by 2-inch; 5- by 4- by 2-inch; 6- by 4- by 2-inch.



Details of tapping bosses, 1-1/4 to 5-inch sizes, for fittings in tables 18, 19, 22, 25, 28, 29, and 47 to 50, inclusive.



Details of tapping bosses, 1-1/4 to 2-inch sizes, for fittings in table 26.



Details of tapping bosses, 1-1/4 to 4-inch sizes, for fittings in tables 45 and 46.

Table 54 Dimensions for tapping bosses 'XH' and 'SV'

Size (inches)	Dimensions in inches										
	A	B	C	D	E	G	H	J	K	L	R
1 1/4	1 11/16	7/16	2 11/16	3/4	7/8	1/2	1 1/2	1 1/4	---	1	1 1/4
1 1/2	1 13/16	7/16	2 13/16	3/4	7/8	1/2	1 1/2	1 1/4	---	1	1 1/4
2	2 1/16	7/16	3 1/4	3/4	1 1/16	3/4	2	2 1/4	---	1	2 1/4
2 1/4	2 13/16	7/16	3 3/4	---	---	---	---	---	---	---	---
3	3 1/16	7/16	4 1/4	1 1/16	1 1/16	1	3	3 1/4	1	---	---
3 1/4	4 1/16	7/16	5 1/4	1 1/4	1 1/16	1 1/4	4	4 1/4	1 1/4	---	---
4	4 1/16	1 1/16	5 3/4	---	---	---	---	---	1 1/4	---	---
5	5 1/16	1 1/16	7 1/4	---	---	---	---	---	1 1/4	---	---

Nominal Shipping Weights  
Pipe

Table 55 Extra Heavy Pipe

Pattern	Extra Heavy Sizes (in inches)								
	2	3	4	5	6	8	10	12	15
5-foot lengths:	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Single hub	25	45	60	75	95	150	215	270	375
Double hub	26	47	63	78	100	157	225	285	395
10-foot lengths:									
Single hub	43	83	108	133	160	265	400	480	705
Double hub	44	85	111	136	165	272	410	495	725

Table 56 Service-Weight Pipe

Pattern	Service Weight Sizes (in inches)								
	2	3	4	5	6	8	10	12	15
5-foot lengths:	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Single hub	20	30	40	52	65	100	145	190	255
Double hub	21	31	42	54	68	105	150	200	270
10-foot lengths:									
Single hub	38	56	75	98	124	185	270	355	475
Double hub	39	57	77	100	127	190	275	365	490

Fittings

Table 57 1/4 Bends

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2	5	4
3	10	7
4	15	10-1/2
5	19	13
6	24	17
8	51	34
10	78	55
12	111	80
15	169	118

Nominal Shipping Weights - Fittings

Table 58 Long 1/4 Bends

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2 by 12	7-1/4	6
2 by 18	9-1/2	7-3/4
2 by 24	12	9-1/2
3 by 12	13-1/4	9-1/4
3 by 18	17-1/4	12
3 by 24	21	14-3/4
4 by 12	18-1/2	13
4 by 18	24	16-1/2
4 by 24	29-1/4	20-1/2
5 by 12	23	15-3/4
5 by 18	29-3/4	20-1/2
5 by 24	36-1/2	25
6 by 12	28-1/2	20
6 by 18	37	26
6 by 24	45-3/4	32-1/2
8 by 12	52	34
8 by 18	64	43
8 by 24	76	51

Table 59 Long low-hub 1/4 Bends

Size (inches)	Weight (pounds)	
	'XH'	'SV'
3 by 12	11-3/4	8-1/4
3 by 14	13	9
3 by 16	14-1/4	10
3 by 18	15-3/4	11
4 by 12	16-3/4	11-3/4
4 by 14	18-1/2	13
4 by 16	20-1/4	14-1/4
4 by 18	22-1/4	15-1/4

Nominal Shipping Weights - Fittings

Table 60 Low Heel 1/4 Bends

Size (inches)	Weight (pounds)	
	'XH'	'SV'
3 by 2	13	9
4 by 2	18	13
4 by 3	19	13-1/2
5 by 2	22	15
5 by 3	24	16-1/2
5 by 4	25	17
6 by 2	27	19
6 by 3	29	20-1/2
6 by 4	30	21

Table 61 High Heel 1/4 Bends

Size (inches)	Weight (pounds)	
	'XH'	'SV'
3 by 2	12-1/2	8-3/4
4 by 2	17-1/2	12-3/4
4 by 3	18-1/4	13
5 by 2	21-1/2	14-3/4
5 by 3	23-1/4	16
5 by 4	24	16-1/2
6 by 2	26-1/2	18-3/4
6 by 3	28-1/4	20
6 by 4	29	20-1/2



Nominal Shipping Weights - Fittings

Table 62 Short Sweep

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2	6	5
3	13	9
4	18	12-1/2
5	23	16
6	28	20
8	57	38
10	88	62
12	123	89
15	187	130

Table 63 Long Sweep

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2	8	6-1/2
3	16	11
4	22	15
5	28	19-1/2
6	34	24
8	67	45
10	103	72
12	141	101
15	212	147

Table 64 1/5 Bends

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2	5	3-1/2
3	10	7
4	14	10-1/2
5	18	13-1/2
6	22	17-1/2
8	47	35
10	72	54
12	102	76-1/2
15	154	115-1/2

Nominal Shipping Weights - Fittings

Table 65 1/6 Bends

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2	5	3-1/2
3	9	6
4	13	10
5	17	13
6	20	16
8	44	33
10	67	50
12	95	71
15	143	107

Table 66 Long 1/6 Bends

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2 by 12	6-3/4	5-1/2
2 by 18	9-1/2	7-1/4
2 by 24	12	9-1/4
3 by 12	13	8-1/2
3 by 18	17	11-1/2
3 by 24	21	14
4 by 12	18	13
4 by 18	23	16
4 by 24	28	20
5 by 12	23	17
5 by 18	29	21-1/2
5 by 24	36	26
6 by 12	27	21
6 by 18	36	27
6 by 24	44	32
8 by 12	50-1/2	37
8 by 18	63	46
8 by 24	76	54

Nominal Shipping Weights - Fittings

Table 67 1/8 Bends

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2	4	3-1/4
3	8	5-1/2
4	12	8-1/2
5	15	10-1/2
6	18	13
8	41	28
10	61	44
12	87	64
15	129	92

Table 68 Long 1/8 Bends

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2 by 12	7	5-1/2
2 by 18	9-1/4	7-1/2
2 by 24	11-1/2	9-1/4
3 by 12	12-3/4	8-3/4
3 by 18	16-1/2	11-1/2
3 by 24	20-1/2	14-1/4
4 by 12	17-1/2	12-1/2
4 by 18	23	16
4 by 24	28	19-1/2
5 by 12	22	15-1/4
5 by 18	28-1/2	20
5 by 24	35	24-1/2
6 by 12	26-1/2	19
6 by 18	34	25
6 by 24	42	31
8 by 12	49	34
8 by 18	62	42
8 by 24	74	51

Nominal Shipping Weights - Fittings

Table 69 1/16 Bends

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2	4	3-1/4
3	8	5-1/2
4	11	7-1/2
5	13	9
6	16	11-1/2
8	36	25
10	52	38
12	75	56
15	108	78

Nominal Shipping Weights - Fittings

Table 70 Y Branches

Size (inches)	Weight, single (pounds)		Weight, double (pounds)	
	'XH'	'SV'	'XH'	'SV'
2	8	6-1/2	11	9
3	17	12-1/2	23	16
4	24	17	32	23
5	32	22	41	28
6	40	28	51	36
8	82	55	107	73
10	133	94	168	120
12	186	135	236	173
15	290	204	368	262
3 by 2	14	10	18	13
4 by 2	17	12	21	15
4 by 3	20	14	26	19
5 by 2	20	14	24	17
5 by 3	24	16-1/2	30	21
5 by 4	27	19	35	24
6 by 2	23	16-1/2	27	20
6 by 3	27	19	33	23
6 by 4	31	22	39	28
6 by 5	35	24	45	31
8 by 2	42	29	46	32
8 by 3	47	32	53	37
8 by 4	52	36	60	42
8 by 5	57	39	66	45
8 by 6	63	44	73	51
10 by 4	74	53	82	59
10 by 5	80	57	89	63
10 by 6	86	61	97	70
10 by 8	110	77	135	94
12 by 4	97	70	105	76
12 by 5	104	74	113	81
12 by 6	111	80	122	88
12 by 8	136	96	161	113
12 by 10	160	115	195	142
15 by 6	152	109	163	117
15 by 8	182	127	207	146
15 by 10	213	152	248	176
15 by 12	242	170	292	210

Nominal Shipping Weights - Fittings

Table 71 Y Branch  
cleanout on main

Size (inches)	Weight without plug (pounds)	
	'XH'	'SV'
2	9	7-1/4
3	15	10-1/2
4	21	14-1/2
5	28	19
6	37	26

Table 72 Y Branch  
cleanout on branch

Size (inches)	Weight without plug (pounds)	
	'XH'	'SV'
2	9	7-1/4
3	15	10-1/2
4	21	14-1/2
5	28	19
6	37	26

Table 73 Y Branches, inverted

Size (inches)	Weight single (pounds)		Weight double (pounds)	
	'XH'	'SV'	'XH'	'SV'
2	9	7-1/4	12	9-3/4
3	18	12-1/2	23	16
4	25	17-1/2	32	22-1/2
5	33	23	42	29
6	41	29	51	37
3 by 2	15	11	18	13
4 by 2	18	13	21	15
4 by 3	22	15-1/2	27	19
5 by 2	22	15	25	17-1/2
5 by 3	25	17	31	21
5 by 4	29	20	37	26
6 by 2	25	18	29	21
6 by 3	29	20	34	24
6 by 4	33	23	40	28
6 by 5	37	26	46	32

Nominal Shipping Weights - Fittings

Table 74 Combination Y and 1/8 Bends

Size (inches)	Weight single (pounds)		Weight double (pounds)	
	'XH'	'SV'	'XH'	'SV'
2	10	8	15	12
3	20	14	29	20
4	29	20	43	30
5	38	26	56	38
6	50	35	75	53
3 by 2	15	10-1/2	20	14
4 by 2	18	13	23	16-1/2
4 by 3	24	17	33	23
5 by 2	21	14-1/2	26	18
5 by 3	27	18-1/2	36	25
5 by 4	33	23	47	32
6 by 2	24	17	29	21
6 by 3	30	21	39	27
6 by 4	36	25	50	35
6 by 5	42	29	60	41

Table 75 Combination Y and  
1/8 Bends, cleanout

Size (inches)	Weight without plug (pounds)	
	'XH'	'SV'
2	9	7-1/4
3	17	11-1/2
4	26	17-1/2
5	34	23-1/2
6	47	33

# Nominal Shipping Weights - Fittings

Table 76 Y Branches, Upright

Size (inches)	Weight, single (pounds)		Weight, double (pounds)	
	'XH'	'SV'	'XH'	'SV'
2	10	8	15	12
3	20	13-1/2	30	20-1/2
4	28	19-1/2	42	29
5	37	25	56	38
6	47	33	70	49
3 by 2	16	11-1/4	20	14
4 by 2	19	13-1/2	24	17
4 by 3	23	16	34	23-1/2
5 by 2	22	15	27	19
5 by 3	27	18-1/2	38	26
5 by 4	32	22	46	31
6 by 2	25	18	30	21-1/2
6 by 3	30	21	41	28-1/2
6 by 4	35	24-1/2	49	34
6 by 5	40	28	60	41



Nominal Shipping Weights - Fittings

Table 77 Sanitary T branches

Size (inches)	Weight, single (pounds)		Weight, double (pounds)	
	'XH'	'SV'	'XH'	'SV'
2	8	6-1/2	11	8-3/4
3	16	12	21	14-1/2
4	22	15-1/2	29	20
5	28	19	36	25
6	34	24-1/2	44	32
8	72	49	92	63
10	108	78	132	97
12	153	113	187	140
15	229	164	272	185
3 by 2	14	10	18	13
4 by 2	17	12	21	15
4 by 3	20	14	25	17-1/2
5 by 2	20	14	24	17
5 by 3	23	16	28	19
5 by 4	26	18	33	23
6 by 2	23	16-1/2	27	19
6 by 3	26	18-1/2	31	22
6 by 4	29	21	36	26
6 by 5	32	22	40	28
8 by 2	43	30	47	33
8 by 3	47	32	52	36
8 by 4	51	35	58	40
8 by 5	55	38	63	43
8 by 6	57	40	67	47
10 by 4	70	50	77	55
10 by 5	73	52	81	58
10 by 6	76	55	85	62
10 by 8	96	68	115	81
12 by 4	95	69	102	74
12 by 5	99	71	107	76
12 by 6	103	74	113	82
12 by 8	120	85	140	99
12 by 10	134	97	155	114
15 by 6	142	102	150	108
15 by 8	162	115	180	128
15 by 10	180	130	200	145
15 by 12	198	143	230	168

Nominal Shipping Weights - Fittings

Table 78 Sanitary T Branches, cleanout

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2	9	7-1/4
3	14	10
4	19	13
5	24	16
6	31	22-1/2

Table 79 Tapped Sanitary T Branches

Size (inches)	Weight (pounds)			
	Single		Double	
	'XH'	'SV'	'XH'	'SV'
2	8	6-1/2	10	8
3	12	8-1/2	14	10
4	15	10-1/2	17	12
5	18	12-1/2	20	14
6	21	15	23	16

Nominal Shipping Weights - Fittings

Table 80 T Branches

Size (inches)	Weight, single (pounds)		Weight, double (pounds)	
	'XH'	'SV'	'XH'	'SV'
2	8	6-1/2	11	8-3/4
3	15	10	19	13-1/2
4	21	14-3/4	26	18
5	26	18	32	22
6	32	23	40	29
8	67	46	82	56
10	105	76	125	92
12	150	110	175	131
15	225	161	260	190
3 by 2	13	9-1/2	16	12
4 by 2	16	11-1/2	19	14
4 by 3	19	13-1/2	23	16
5 by 2	19	13	22	15-1/2
5 by 3	22	15	26	18
5 by 4	24	16-1/2	30	21
6 by 2	22	15	25	18
6 by 3	25	18	29	21
6 by 4	27	19	33	23
6 by 5	30	21	35	24
8 by 2	43	30	46	33
8 by 3	47	32	50	35
8 by 4	50	35	55	38
8 by 5	53	36	59	40
8 by 6	55	38	62	44
10 by 4	70	50	75	54
10 by 5	74	52	80	56
10 by 6	78	55	85	60
10 by 8	93	66	108	76
12 by 4	93	67	98	71
12 by 5	97	70	103	74
12 by 6	100	72	108	78
12 by 8	117	83	132	94
12 by 10	130	95	150	111
15 by 6	140	101	145	105
15 by 8	160	114	175	124
15 by 10	177	128	195	142
15 by 12	195	141	220	162

Nominal Shipping Weights - Fittings

Table 81 Tapped T Branches

Size (inches)	Weight Single (pounds)		Weight Double (pounds)	
	'XH'	'SV'	'XH'	'SV'
2	7	5-3/4	8	6-1/2
3	12	8	13	9
4	15	10-1/2	17	12
5	18	12-1/2	19	13
6	20	14-1/2	22	16
3 by 2-1/2	13	8	14	9
4 by 2-1/2	15-1/4	10-3/4	17-1/4	12-1/4
4 by 3	15-1/4	10-3/4	17-1/4	12-1/4
5 by 2-1/2	20	13-1/2	21-1/2	15
5 by 3	21	14-3/4	22-1/2	16-1/4
5 by 4	22	15	24	17
6 by 2-1/2	24-3/4	18-3/4	26-1/2	20-1/2
6 by 3	26-1/2	19-1/2	30	21
6 by 4	28	20	30	22

Table 82 T Branches, cleanout

Size (inches)	Weight Without Plug (pounds)	
	'XH'	'SV'
2	7	5-3/4
3	13	8
4	17	10-1/2
5	22	15
6	28	20

Nominal Shipping Weights - Fittings

Table 83 Vent Branches

Size (inches)	Weight single (pounds)		Weight double (pounds)	
	'XH'	'SV'	'XH'	'SV'
2	9	7-1/4	12	9-1/2
3	18	12	23	15-1/2
4	25	17	32	22
5	32	22	41	28
6	41	29	51	35
3 by 2	14	9-1/2	17	11-1/2
4 by 2	18	12-1/2	21	14-1/2
4 by 3	21	14-1/2	26	18
5 by 2	21	14	24	16
5 by 3	24	16	29	17
5 by 4	28	19	35	24
6 by 2	22	15-1/2	25	17-1/2
6 by 3	27	19	32	22
6 by 4	31	22	38	26
6 by 5	36	25	45	31

Table 84 Regular offsets, 2-inch

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2 by 2	5	4-1/2
2 by 4	8	6-3/4
2 by 6	9	7-1/2
2 by 8	9-3/4	8
2 by 10	10-3/4	9
2 by 12	11-3/4	9-3/4
2 by 14	12-3/4	10-1/4
2 by 16	13-3/4	11-1/4
2 by 18	14-1/2	12
2 by 20	15-1/2	12-3/4
2 by 22	16-1/2	13-3/4
2 by 24	17-1/2	14-1/2

Nominal Shipping Weights - Fittings

Table 85 Regular offsets, 3-inch

Size (inches)	Weight (pounds)	
	'XH'	'SV'
3 by 2	10	7
3 by 4	12	8-1/2
3 by 6	13-1/4	9-1/2
3 by 8	14-3/4	10-1/2
3 by 10	16	11-1/2
3 by 12	17-1/2	12-1/2
3 by 14	18-3/4	13-1/4
3 by 16	20-1/2	14-1/2
3 by 18	21-1/2	15-1/4
3 by 20	23	16-1/4
3 by 22	24-1/2	17-1/2
3 by 24	26	18-1/2

Table 86 Regular offsets, 4-inch

Size (inches)	Weight (pounds)	
	'XH'	'SV'
4 by 2	14	10
4 by 4	16	11
4 by 6	18	12-3/4
4 by 8	19-3/4	14
4 by 10	21-1/2	15-1/4
4 by 12	23-1/2	16-3/4
4 by 14	25	18
4 by 16	27	19-1/4
4 by 18	29	20-1/2
4 by 20	30-1/2	21-3/4
4 by 22	32-1/2	23
4 by 24	34	24-1/4

Table 87 Regular offsets, 5-inch

Size (inches)	Weight (pounds)	
	'XH'	'SV'
5 by 2	17	12
5 by 4	21	15
5 by 6	22-1/2	16
5 by 8	25	17-1/2
5 by 10	27	19
5 by 12	29-1/2	21
5 by 14	31-1/2	22-1/2
5 by 16	33-1/2	24
5 by 18	36	25-1/2
5 by 20	38	27
5 by 22	40-1/2	28-1/2
5 by 24	42-1/2	30

Nominal Shipping Weights - Fittings  
Table 88 Regular offsets, 6-inch

Size (inches)	Weight (pounds)	
	'XH'	'SV'
6 by 2	21	15
6 by 4	25	18
6 by 6	28	20
6 by 8	30-1/2	21-3/4
6 by 10	33	23-1/2
6 by 12	35-1/2	25-1/4
6 by 14	38-1/2	27
6 by 16	41	29
6 by 18	43-1/2	31
6 by 20	46-1/2	33
6 by 22	49	34-1/2
6 by 24	51-1/2	36-1/2

Table 89 1/8 Bend offset, 2-inch

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2 by 2	5	4-1/2
2 by 4	6	5
2 by 6	8	6-1/2
2 by 8	9	7-1/4
2 by 10	10	8
2 by 12	11	9
2 by 14	12	9-3/4
2 by 16	13	10-1/2
2 by 18	14	11
2 by 20	15	12
2 by 22	16	13
2 by 24	17	13-1/2

Table 90 1/8 Bend offset, 3-inch

Size (inches)	Weight (pounds)	
	'XH'	'SV'
3 by 2	10	7
3 by 4	12	8
3 by 6	14	9-1/2
3 by 8	16	11
3 by 10	18	12
3 by 12	20	13-1/2
3 by 14	22	15
3 by 16	24	16
3 by 18	26	17-1/2
3 by 20	27	18
3 by 22	29	19-1/2
3 by 24	31	21

Nominal Shipping Weights - Fittings  
Table 91 1/8 Bend offset, 4-inch

Size (inches)	Weight (pounds)	
	'XH'	'SV'
4 by 2	14	10
4 by 4	16	11
4 by 6	19	13
4 by 8	21	14
4 by 10	24	16
4 by 12	26	18
4 by 14	29	20
4 by 16	31	21
4 by 18	34	23
4 by 20	36	24
4 by 22	39	26
4 by 24	41	28

Table 92 1/8 Bend offset, 5-inch

Size (inches)	Weight (pounds)	
	'XH'	'SV'
5 by 2	17	12
5 by 4	21	15
5 by 6	24	17
5 by 8	27	19
5 by 10	30	21
5 by 12	33	23
5 by 14	36	25
5 by 16	39	27
5 by 18	42	29
5 by 20	45	31
5 by 22	48	33
5 by 24	51	35

Table 93 1/8 Bend offset, 6-inch

Size (inches)	Weight (pounds)	
	'XH'	'SV'
6 by 2	21	15
6 by 4	25	18
6 by 6	28	20
6 by 8	32	22-1/2
6 by 10	36	25
6 by 12	39	27
6 by 14	43	30
6 by 16	46	32
6 by 18	50	35
6 by 20	54	37
6 by 22	57	40
6 by 24	61	42



Nominal Shipping Weights - Fittings

Table 94 Double hubs

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2	5	4
3	8	6
4	11	8
5	13	9
6	15	11
8	35	24
10	50	40
12	67	54
15	91	73

Table 95 Long Double Hubs

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2 by 30	14-1/2	11-1/2
3 by 30	26	17
4 by 30	33	22-1/2

Nominal Shipping Weights - Fittings

Table 96 Reducers

Size (inches)	Weight (pounds)	
	'XH'	'SV'
3 by 2	6	4-1/2
4 by 2	7	5
4 by 3	9	6-1/2
5 by 2	8	6
5 by 3	10	7
5 by 4	11	8
6 by 2	9	6-1/2
6 by 3	11	7-1/2
6 by 4	12	8-1/2
6 by 5	13	9
8 by 2	17	12
8 by 3	18	12-1/2
8 by 4	19	13
8 by 5	20	13-1/2
8 by 6	21	15
10 by 4	25	17
10 by 5	26	17-1/2
10 by 6	27	19
10 by 8	35	24
12 by 4	33	22
12 by 5	34	23
12 by 6	35	24
12 by 8	45	31
12 by 10	51	37
15 by 6	44	30
15 by 8	55	38
15 by 10	60	43
15 by 12	67	50

Nominal Shipping Weights - Fittings

Table 97 Increasers

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2 by 3	9	6-1/2
2 by 4	10	7
2 by 5	12	8-1/2
2 by 6	13	9-1/2
3 by 4	12	9
3 by 5	14	9-1/2
3 by 6	15	11
4 by 5	15	10-1/2
4 by 6	16	11-1/2
4 by 8	32	22
5 by 6	18	13
5 by 8	34	24
5 by 10	44	33
6 by 8	35	24
6 by 10	45	33
6 by 12	58	44
8 by 10	55	40
8 by 12	64	48
8 by 15	82	61
10 by 12	73	54
10 by 15	88	65
12 by 15	97	71

Table 98 Tapped Increasers

Size (inches)	Weight (pounds)	
	'XH'	'SV'
1-1/2 by 2	7	5
2 by 3	9	6-1/2
2 by 4	11	8
2 by 5	12	8-1/2
2 by 6	14	10

Nominal Shipping Weights - Fittings  
Table 99 Long Increases, Spigot and Tapped

Size (inches)	Weight, spigot (pounds)		Weight, tapped (pounds)	
	'XH'	'SV'	'XH'	'SV'
2 by 4 by 24	19	12-1/2	19	13
2 by 4 by 30	23	15-1/2	24	16
2 by 4 by 36	27	18	29	19
2 by 4 by 48	39	26	40	27
3 by 4 by 24	20	13-1/2	20	13-1/2
3 by 4 by 30	25	17	26	17-1/2
3 by 4 by 36	30	20	31	21
3 by 4 by 48	41	27	42	28
4 by 5 by 24	25	17	26	17
4 by 5 by 30	31	21	33	22
4 by 5 by 36	38	25	39	26
4 by 5 by 48	51	34	52	35
4 by 6 by 24	29	19	30	20
4 by 6 by 30	36	24	38	25
4 by 6 by 36	44	29	45	30
4 by 6 by 48	59	40	61	41

Table 100 S Traps

Size (inches)	Weight without hub vent (pounds)		Weight with hub vent (pounds)	
	'XH'	'SV'	'XH'	'SV'
2 by 2	9	7-1/4	12	9-1/2
3 by 2	20	14	23	17
3 by 3	20	13-1/2	24	16-1/2
4 by 2	30	21	33	23
4 by 3	30	21	34	23
4 by 4	30	20	36	25
5 by 4	41	28	47	32
5 by 5	41	28	48	33
6 by 4	54	37	62	43
6 by 6	54	37	63	44

Nominal Shipping Weights - Fittings

Table 101 3/4 S Traps

Size (inches)	Weight without hub vent (pounds)		Weight with hub vent (pounds)	
	'XH'	'SV'	'XH'	'SV'
2 by 2	8	6-1/2	11	9
3 by 2	18	12	21	14-1/2
3 by 3	18	12	22	15
4 by 2	27	18-1/2	30	21
4 by 3	27	18-1/2	31	21
4 by 4	27	18-1/2	33	23
5 by 4	37	25	43	29
5 by 5	37	26	44	30
6 by 4	49	34	55	38
6 by 6	49	34	58	41

Table 102 1/2 S Traps

Size (inches)	Weight without hub vent (pounds)		Weight with hub vent (pounds)	
	'XH'	'SV'	'XH'	'SV'
2 by 2	8	6-1/2	11	9
3 by 2	17	11-1/2	20	14
3 by 3	17	11-1/2	21	14-1/2
4 by 2	25	17	28	19
4 by 3	25	17	29	20
4 by 4	25	17	31	21
5 by 4	34	23	40	27
5 by 5	34	23	41	28
6 by 4	45	31	51	35
6 by 6	45	31	54	38
8 by 4	97	65	103	70
8 by 6	97	65	107	73
10 by 6	166	113	175	121
12 by 6	242	171	251	173
12 by 8	242	171	264	182
15 by 8	398	270	425	292

Nominal Shipping Weights - Fittings

Table 103 Running Traps

Size (inches)	*Weight (pounds)					
	W <sub>1</sub>		W <sub>2</sub>		W <sub>3</sub>	
	'XH'	'SV'	'XH'	'SV'	'XH'	'SV'
2 by 2	9	7-1/4	12	9-1/2	15	12
3 by 2	19	13	22	15	25	17-1/2
3 by 3	19	13	23	16	27	19
4 by 2	28	19	31	22	34	24
4 by 3	28	19	32	22	36	25
4 by 4	28	19	34	23	40	28
5 by 4	37	26	43	29	49	34
5 by 5	37	26	45	31	51	35
6 by 4	48	33	54	37	60	42
6 by 6	48	33	57	40	66	47
8 by 4	103	70	109	74	115	78
8 by 6	103	70	112	76	121	83
10 by 6	175	120	184	127	193	134
12 by 6	256	176	265	183	274	190
12 by 8	256	176	278	191	300	206
15 by 8	414	284	436	299	463	317

\*Weights are given as follows:

W<sub>1</sub>, without hub vent

W<sub>2</sub>, with single hub vent

W<sub>3</sub>, with double hub vent

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Nominal Shipping Weights - Fittings  
Table 104

Screw Plugs (brass)

Size (inches)	Weight (pounds)
1-1/4	1/4
1-1/2	3/8
2	1/2
2-1/2	3/4
3	1-1/4
3-1/2	1-1/2
4	2
5	3-1/2
6	4-3/4

Table 105 Plugs

Size (inches)	Weight (pounds)	
	'XH'	'SV'
2	1-3/4	1-1/4
3	3	2-1/4
4	4-1/2	3-1/4
5	6	4-1/2
6	8	6
8	15	11-1/4
10	23	17-1/4
12	33	24-3/4
15	50	37-1/2

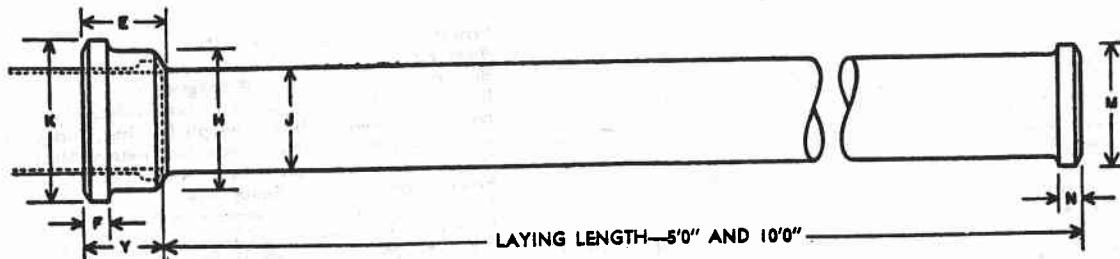
Table 106 Iron-body ferrules

Size (inches)	Weight without plug (pounds)	
	'XH'	'SV'
2	1-1/2	1-1/4
3	2-3/4	2
4	4	3
5	5	3-1/4
6	6	4-1/4
8	12	9
10	20	15
12	28	21
15	43	30

# 6. APPENDIX

The following dimensions are given for use as convenient information on details of the hub, barrel, and spigot, and are not requirements of the standard.

## OUTSIDE DIMENSIONS of HUB, BARREL, and SPIGOT for DETAILING



Size (nom. I.D.)	Extra-heavy pipe <sup>1</sup> 'XH'							
	K max.	H max.	J	F	Y	E	M	N
2	4-1/8	3-5/8	2-3/8	3/4	2-1/2	2-3/4	2-3/4	11/16
3	5-3/8	4-15/16	3-1/2	13/16	2-3/4	3-1/4	3-7/8	3/4
4	6-3/8	5-15/16	4-1/2	7/8	3	3-1/2	4-7/8	13/16
5	7-3/8	6-15/16	5-1/2	7/8	3	3-1/2	5-7/8	13/16
6	8-3/8	7-15/16	6-1/2	7/8	3	3-1/2	6-7/8	13/16
8	11-1/16	10-7/16	8-5/8	1-3/16	3-1/2	4-1/8	9	1-1/8
10	13-5/16	12-11/16	10-3/4	1-3/16	3-1/2	4-1/8	11-1/8	1-1/8
12	15-7/16	14-13/16	12-3/4	1-7/16	4-1/4	5	13-1/8	1-3/8
15	18-13/16	18-3/16	15-7/8	1-7/16	4-1/4	5	16-1/4	1-3/8
Size (nom. I.D.)	Service-weight pipe <sup>1</sup> 'SV'							
	K max.	H max.	J	F	Y	E	M	N
2	3-15/16	3-3/8	2-1/4	3/4	2-1/2	2-3/4	2-5/8	11/16
3	5	4-1/2	3-1/4	13/16	2-3/4	3-1/4	3-5/8	3/4
4	6	5-1/2	4-1/4	7/8	3	3-1/2	4-5/8	13/16
5	7	6-1/2	5-1/4	7/8	3	3-1/2	5-5/8	13/16
6	8	7-1/2	6-1/4	7/8	3	3-1/2	6-5/8	13/16
8	10-1/2	9-7/8	8-3/8	1-3/16	3-1/2	4-1/8	8-3/4	1-1/8
10	12-13/16	12-3/16	10-1/2	1-3/16	3-1/2	4-1/8	10-7/8	1-1/8
12	14-15/16	14-5/16	12-1/2	1-7/16	4-1/4	5	12-7/8	1-3/8
15	18-5/16	17-5/8	15-5/8	1-7/16	4-1/4	5	16	1-3/8

<sup>1</sup> Dimension in inches.



## ACCEPTORS

The manufacturers, distributors, users and others listed below have individually indicated in writing their acceptance of this Commercial Standard prior to its publication. The acceptances indicate an intention to utilize the standard as far as practicable, but reserve the right to depart from it as may be deemed desirable. The list is published to show the extent of recorded public support for the standard, and should not be construed as indicating that all products made by the acceptors actually comply with its requirements.

Products that meet all requirements of the standard may be identified as such by a certificate, grade mark, or label. Purchasers are encouraged to require such specific evidence of compliance, which may be given.

### ASSOCIATIONS (General Support)

American Institute of Architects, Washington, D.C.  
American Institute of Supply Associations, Washington, D.C.  
American Specification Institute, Chicago, Ill.  
Association of Plumbing & Piping Contractors of Nashville, Madison, Tenn.  
Association of Master Plumbers, Inc., Independence, Mo.  
Cast Iron Soil Pipe Institute, Washington, D.C.  
Central Supply Association, Chicago, Ill.  
Harrisburg Association of Plumbing Contractors, Harrisburg, Pa.  
National Association of Plumbing—Heating—Cooling Contractors, Johnstown, Pa.  
Plumbing Fixture Manufacturers Association, Washington, D.C.  
Sanitary-Safety Plumbing Association, Newark, Ohio

### PRODUCERS

Alabama Pipe Co., Division of Woodward Iron Co., Anniston, Ala.  
American Brass and Iron Foundry, Oakland, Calif.  
American Foundry, Los Angeles, Calif.  
Anaheim Foundry Co., Anaheim, Calif.  
Anniston Foundry Co., Anniston, Ala.  
Buffalo Pipe & Foundry Corp., Krupp Div., Quakerstown, Pa.  
Buffalo Pipe & Foundry Corp., Buffalo, N.Y.  
California/Alabama Pipe Co., Division of Woodward Iron Co., South Gate, Calif.  
Central Foundry Co., New York, N.Y.  
Charlotte Pipe and Foundry Co., Charlotte, N.C.  
Clay & Bailey Manufacturing Co., Kansas City, Mo.  
East Penn Foundry Co., Subsidiary of Tyler Pipe & Foundry Co., Macungie, Pa.  
Glamorgan Pipe & Foundry Co., Lynchburg, Va.  
Josam Manufacturing Co., Michigan City, Ind.  
Rich Manufacturing Co., of California, Los Angeles, Calif.  
Rich Manufacturing Co., of California, Portland, Oreg.  
Richmond Foundry & Mfg. Co., Richmond, Va.  
Russell Pipe & Foundry Co., Inc., Alexander City, Ala.  
Salem Pipe & Iron Mfg. Co., Bridgeton, N.J.  
Tyler Pipe & Foundry Co., Tyler, Tex.  
United States Pipe and Foundry Co.—Soil Pipe Division, Anniston, Alabama and Chattanooga, Tenn., Chattanooga, Tenn.  
Universal Cast Iron Mfg. Co., South Gate, Calif. (General Support)  
Wade, Inc., Franklin Park, Ill.  
Western Foundry, Tyler, Tex.

### DISTRIBUTORS

Albany Steel & Iron Supply Co., Inc., Albany, N.Y.  
Albert Pipe Supply Co., Inc., Brooklyn, N.Y.  
Ahrens & McCarron, Inc., St. Louis, Mo.  
Aldrich Supply Co., Long Beach, Calif.  
American Plumbing & Steam Supply Co., Anchorage, Alaska  
American Supply Corporation, El Dorado, Ark.  
Andrew, W. T., Co., Detroit, Mich.  
Austin Plumbing Supply Co., Inc., Austin, Tex.  
Bailey Meissner Co., Wichita Falls, Tex.  
Bethlehem Plumbing Supply Co., Bethlehem, Pa.

Bennett Co., Inc., Somerville, Mass.  
Biggs Pump & Supply, Inc., Lafayette, Ind.  
Blodgett Supply Co., Inc., Burlington, Vt.  
Boston Pipe & Fittings Co., Inc., Cambridge, Mass.  
Border Plumbing & Heating Supply Co., Inc., Portchester, N.Y.  
Boyer Campbell, Murray W. Sales Div., Detroit, Mich.  
Bronson Supply Co., Little Rock, Ark.  
Bruce-Rogers Co., Fort Smith, Ark.  
Buck Supply Co., Inc., Greenville, N.C.  
Burack, I., Inc., Yonkers, N.Y.  
Busser Supply Co., Lewisburg, Pa.  
Butts County Associated Plumbing Contractors, Inc., Oroville, Calif.

Capitol Plumbing & Heating Supply Co., Springfield, Ill.  
Capitol Supply Co., Lincoln, Nebr.  
Coast Pipe & Supply Co., San Jose, Calif.  
Columbia Pipe & Supply Co., Chicago, Ill.  
Commercial Pipe & Supply Corp., Buffalo, N.Y.  
Conestoga Heating & Plumbing Supply, Inc., Lancaster, Pa.  
Central Supply Co., Worcester, Mass.

Dallman Co., Sacramento, Calif.  
Danser Hardware & Supply Co., Clarksburg, W. Va.  
Davis & Warshow, Inc., New York, N.Y.  
Delta Pipe & Supply Co., Stockton, Calif.  
Dixie Plumbing Supply Co., Macon, Ga.  
Duluth Plumbing Supplies Co., Duluth, Minn.  
Duro Supply Co., Bay City, Mich.

Eau Claire Plumbing Supply Co., Eau Claire, Wis.  
Economy Plumbing & Heating Supply Co., Inc., Annapolis, Md.  
Engineering & Equipment Co., Albany, Ga.

Fields & Co., Lubbock, Tex.  
Fleck Bros. Co., Camden, N.J.  
Franklin Supply Co., Denver, Colo.  
Friedland, Martin, & Co., Pembroke Pines, Fla.  
Frontier Water & Steam Supply Co., Buffalo, N.Y.

Gaspro, Limited, Honolulu, Hawaii  
Goodin Co., Minneapolis, Minn.  
Gibbons, M. J., Supply Co., Dayton, Ohio  
Gibbons, M. J., Supply Co., Middletown, Ohio

Hajoca Corp., Ardmore, Pa.  
Harbro Plumbing Supply Corp., Buffalo, N.Y.  
Harrison Bros., Inc., Washington, D.C.  
Hereford-Union Supply Co., San Fernando, Calif.  
Honolulu Iron Works Co., Honolulu, Hawaii  
Horne-Wilson, Inc., Atlanta, Ga.  
Hughes Supply Co., Mansfield, Ohio  
Hughes Supply, Inc., Daytona Beach, Fla.

Illinois Plumbing & Heating Supply Co., Springfield, Ill.  
Iowa Plumbers Supply Co., Des Moines, Iowa  
Industrial Supply Co., Terre Haute, Ind.

Jahns Supply Co., Fort Worth, Tex.

Kiefaber, W. H., Co., Hamilton, Ohio  
Keeler, E., Co., Williamsport, Pa.

Lee Hardware Co., Salina, Kans.  
 LeValley McLeod, Inc., Schenectady, N.Y.  
 Lord-Babcock, Inc., Los Angeles, Calif.  
 Lufkin Foundry & Machine Co., Mill Supplies Div., Lufkin, Tex.

McDonald, A. Y., Manufacturing Co., Denver, Colo.  
 McGowin Lyons Hardware & Supply Co., Mobile, Ala.  
 Malone Plumbing Supply Co., Pittsburgh, Pa.  
 Masters' Supply, Inc., Louisville, Ky.  
 Milstead Co., Austin, Tex.  
 Morrison Supply Co., Fort Worth, Tex.  
 Missouri-Kansas Supply Co., Inc., Kansas City, Mo.  
 Noland Co., Newport News, Va.  
 Nelsen Co., Royal Oak, Mich.

Otis McAllister Export Corp. of New Orleans, Inc.,  
 New Orleans, La.

Parnell-Martin Supply Co., Charlotte, N.C.  
 Patterson, W. S., Co., Appleton, Wis.  
 Plumbers Supply Co., New Bedford, Mass.  
 Plumbers Supply Co., Tulsa, Okla.  
 Plumbing & Industrial Supply Co., Inc., Evansville, Ind.

Raub Supply Co., Lancaster, Pa.  
 Roberts Supply Co., Omaha, Nebr.  
 Rochester Plumbing Supply Co., Inc., Rochester, N.Y.

Sage Supply Co., Inc., Binghamton, N.Y.  
 Salina Supply Co., Salina, Kans.  
 Sanitary Plumbing Supply Co., Jersey City, N.J.  
 Sears, Roebuck and Co., Chicago, Ill.  
 Seashore Supply of Wildwood, Wildwood, N.J.  
 Schoeller Plumbing, Trenton, N.J.  
 Southland Supply Co., Inc., Dallas, Tex.  
 Sunny Pipe & Supply Co., Phoenix, Ariz.  
 Smith-Bennett Co., Inc., Santa Monica, Calif.  
 Smith Pipe & Steel Co., Phoenix, Ariz.  
 Susitna Plumbing Supply Co., Inc., Anchorage, Alaska

Tholen Bros. Supply Co., Leavenworth, Kans.

Universal Supply Co., Newark, Ohio.  
 U.S. Supply Co., Kansas City, Mo.

Valley Supply Corp., Neenah, Wis.  
 Vogel, P.A., & Sons Co., Inc., Louisville, Ky.

Ward Brothers Mill Supply Co. Inc., Lockport, N.Y.  
 Webb, F. W., Manufacturing Co., Boston, Mass.  
 Weber, C. L., & Company, Inc., Philadelphia, Pa.  
 Weeks, Ralph E., Inc., Scranton, Pa.  
 Western Maryland Supply Corp. Hagerstown, Md.  
 Western Plumbing Supply Co., Ltd., San Jose, Calif. (General Support)  
 Wigman Co., Sioux City, Iowa  
 Wisconsin Valley Distributing Corp., Wausau, Wis.  
 Yonkers Plumbing & Heating Supply Corp., Yonkers, N.Y.

#### USERS

Ashton, Brazier & Montmorency, Architects, Salt Lake City, Utah  
 Baker, John W., Plumbing Service, Dallas, Tex.  
 Brust & Brust Architects Milwaukee, Wis.  
 Best, A. S., Chevy Chase, Md.  
 Buchi Plumbing Co., Nashville, Tenn.  
 Burgart, A., Inc., Rochester, N.Y.  
 Cannon & Mullen, Architects, Salt Lake City, Utah  
 Castle Plumbing & Heating Corp. Jamaica, N.Y.  
 Ewing Miller Associates, Inc., Terre Haute, Ind. (General Support)  
 Flannagan & Sons, Eric G., Henderson, N.C.  
 Gawrusik, Paul J. & Associates Inc., Chicago, Ill.  
 General Plumbing & Heating Co., Inc., Pottsville, Pa.  
 Grellinger-Rose Associates, Inc., Milwaukee, Wis. (General Support)  
 Hensley-Schmidt, Inc., Chattanooga, Tenn.  
 Holdstein, Milo S., Cleveland, Ohio  
 Lockard & Casazza, Reno, Nevada  
 Markuly Plumbing & Heating Co., Inc., Madison, Ill.

Mason, George M., Plumbing Co., Augusta, Ga.  
 McPherson Co. Greenville, S.C. (General Support)  
 New York Central Railroad, New York, N.Y.  
 Palco Mechanical Contractors, Inc., Wichita Falls, Tex.  
 Plumbing & Heating, Dania, Fla.  
 Post, Geo. B., & Sons, New York, N.Y.  
 Price, Oscar M., Castro Valley, Calif.  
 Reliable Plumbing & Heating Co., Champaign, Ill.  
 Sullivan Plumbing & Heating Co., Port Huron, Mich.  
 Sverdrup & Parcel & Associates, Inc., St. Louis, Mo. (General Support)  
 Van Dyke, James H., & Associates, Los Angeles, Calif.  
 Vogel, Willis A., Toledo, Ohio  
 Volkert, David, and Associates, Miami, Fla.  
 Wank, Adams & Slavin, Office of Fellheimer & Wagner, New York, N.Y.  
 Winona Plumbing Co., Inc., Winona, Minn.

#### LABORATORIES

Omaha Testing Laboratories, Inc., Omaha, Nebr.  
 Pittsburgh Testing Laboratory, Pittsburgh, Pa.  
 Southern Testing Laboratories, Birmingham, Ala.  
 Twin City Testing and Engineering Laboratory, Inc., St. Paul, Minn.  
 United States Testing Co. Inc., Hoboken, N.J.

#### U.S. GOVERNMENT

Agriculture, Department of, Washington, D.C.  
 Army, Department of the, Chief of Engineers, Washington, D.C. (General Support)  
 Interior, Department of, Washington, D.C.  
 Justice, Department of, Bureau of Prisons, Washington, D.C.  
 Veterans Administration, Washington, D.C.

#### STATE AND LOCAL GOVERNMENT

Auburn, City of, Plumbing Board, New York, N.Y.  
 Augusta, City of, Dept. of Inspection, Augusta, Ga.  
 Baltimore, City of, Bureau of Bldg. Inspection, Baltimore, Md.  
 Champaign, City of, Champaign, Ill.  
 Cumberland, City of, Engineering Dept., Cumberland, Md.  
 Dodge City, City Inspector, Dodge City, Kans.  
 Detroit, City of, Bureau of Plumbing, Detroit, Mich.  
 Denver, City & County of, Bldg. Dept., Denver, Colo.  
 Duluth, City of, Bldg. Inspection Div., Duluth, Minn.  
 East Cleveland, City of, City Engineer, East Cleveland, Ohio  
 Evanston, City of, Plumbing Inspector, Evanston Ill.  
 Fargo, City of, Engineering & Inspections Dept., Fargo, N. Dak.  
 Fort Lauderdale, City of, Chief Plumbing Inspector, Fort Lauderdale, Fla.  
 Grand Rapids, City of, Community Improvement & Inspection Services, Grand Rapids, Mich.  
 Jersey City, Dept. of Health & Welfare, Jersey City, New Jersey  
 Lewiston, City of, Plumbing Inspector, Lewiston, Maine  
 Lincoln, City of, Chief Plumbing Inspector, Lincoln, Nebraska  
 Lubbock, City of, Chief Plumbing Inspector, Lubbock, Tex.  
 Maine, State of, Augusta Maine  
 North Carolina, State of, Division of Purchase & Contract, Raleigh, North Carolina  
 Pennsylvania, State of, Bureau of Standards, Harrisburg, Pa.  
 Pueblo, City of, Chief Building Inspector, Pueblo, Colo.  
 San Francisco, City of, Department of Public Works, San Francisco, Calif.  
 San Lorenzo, City of, Oro Loma Sanitary District, San Lorenzo, Calif.  
 Santa Clara, City of, Bldg. Inspection Department, Santa Clara, Calif.  
 Savannah, City of, Savannah, Ga.  
 Springfield, City of, Senior Plumbing & Gas Inspector, Springfield, Mass.  
 Shreveport, City of Louisiana, Shreveport, La.  
 Terre Haute Master Plumbers, Inc., Terre Haute, Indiana  
 Tulsa, City of, Tulsa, Okla.  
 Wilson, City of, Wilson, N.C.  
 Vermont State of, Montpelier, Vt.

# ACCEPTANCE OF COMMERCIAL STANDARD

## CS188-66, Cast Iron Soil Pipe and Fittings

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this Commercial Standard.

Date \_\_\_\_\_

Office of Product Standards  
National Bureau of Standards  
U.S. Department of Commerce  
Washington, D.C. 20234

WITHDRAWN

Gentlemen:

We believe that this Commercial Standard constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

production<sup>1</sup>                      distribution<sup>1</sup>                      use                      other interest  
of this commodity.

We reserve the right to depart from the standard as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer \_\_\_\_\_  
(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer \_\_\_\_\_

Organization \_\_\_\_\_  
(Fill in exactly as it should be listed)

Street address \_\_\_\_\_

City, zone, and State \_\_\_\_\_

<sup>1</sup> Underline the applicable words. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interest, trade associations, trade papers, etc., desiring to record their general support, the words "General support" should be added after the signature.

(Cut on this line)

## TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial Standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of Commercial Standards is to establish, for specific commodities, nationally recognized grades or consumer criteria, and the benefits therefrom will be measureable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the standard, where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function, performed by the Department of Commerce in the voluntary establishment of Commercial Standards on a nationwide basis is fourfold: First, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold publication.